

Forest Biomass Initiative

Update to the 2011 Washington State Legislature

December 2010

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EXECUTIVE SUMMARY

Upon taking office in 2009, Commissioner of Public Lands Peter Goldmark initiated the Department of Natural Resource's Forest Biomass Initiative to demonstrate the utility of forest biomass as an energy feedstock. Since then, the initiative has emerged as a significant contributor to Washington's renewable energy sector.

In Washington, forest biomass consists of residual branches, needles, and tree tops (slash) left over from ongoing logging operations; products of pre-commercial thinning (small saplings from overcrowded young forests); tree stems and tops thinned from forests that are at risk from wildfires, insects or diseases (forest health treatments) that are not currently utilized; clean, untreated wood construction and demolition waste (that would otherwise have gone to the landfill); and unused materials from lumber mills, such as sawdust, shavings, chips or bark.

Forest Biomass Pilot Projects

At Commissioner Goldmark's request, the 2009 Washington State Legislature passed into law HB 2165 which authorized the agency to move forward biomass-to-energy demonstration projects. Four projects were selected: Nippon Paper Inc. (Port Angeles), Atlas Pellets (Omak), Borgford Bioenergy (Colville), and Parametrix Inc. (Bingen). The four pilot projects selected demonstrate an array of forest biomass processing technologies, and each contributes uniquely to the state's energy sector. Additionally, the pilot projects were of a scale, facility efficiency, and location that both complied with the parameters set forth in the legislation and were consistent with the agency's sustainability goals.

After the pilot projects were selected, DNR convened multi-agency implementation teams to assist in each of the projects' success. Teams consisted of representatives from Washington Departments of Natural Resources, Ecology, Commerce and the Governor's Office of Regulatory Assistance, Washington State University, as well as NGO's, community groups, and city and county government representatives.

Nippon Paper, Inc. (combined heat and power) and Borgford Bioenergy (slow pyrolysis) are moving ahead. Both received State Energy Program (SEP) grants through the Washington Department of Commerce. Nippon is largely through their permitting process, currently awaiting approval on their Air Quality Permit. They plan to begin construction of the boiler by the end of the year. Securing reliable sources of forest biomass feedstock, including from DNR-managed lands will be critical for the Nippon project.

Borgford Bioenergy, through the pilot project process, has been able to bring the Springdale Lumber Mill back into operation (employing thirty people in Springdale, WA). Borgford is currently fabricating his slow pyrolysis system to be installed at the Springdale Lumber Mill. A lesson revealed by this project is the conundrum of permitting new technology that has no record of performance to use as a reference in the permitting process.

Two of the pilot projects have faced insurmountable challenges. Parametrix Inc. was unable to secure the funding that was necessary to bring fast pyrolysis technology off the laboratory bench and into a pre-commercialization phase. New funding pathways for projects of this nature and scale may need to be found to ensure that Washington continues to lead in technological innovation. Atlas Pellets, due to financial constraints of the parent company and economic pressure resulting from imported pellets, was forced to close their doors in November 2010, accentuating the problem of sustaining manufacturing infrastructure in this region of Washington.

Forest Biomass Supply

In order to secure project financing for major bioenergy facilities, long-term agreements for biomass supply are necessary. In 2010, the Washington State Legislature passed a second bill, 2SHB 2184. This

bill enables DNR to enter into long-term contracts for sale of forest biomass from DNR-managed lands, after completing supply inventories of the areas proposed for sale.

In 2010, DNR sought and ultimately received a \$1M grant from the U.S. Forest Service, a portion of which has been allocated to a state-wide, all lands forest biomass supply assessment. The study, to be conducted by the University of Washington with TSS Consultants, will build on previous forest biomass supply analyses, using finer scale data and evaluating individual land managers' objectives, operational and economic factors for biomass availability, and environmental sustainability. The project will also produce a forest biomass supply calculator that can help project developers, landowners, and others estimate the availability of adequate supply of forest biomass in specific areas.

Forest Biomass and Carbon Neutrality

2SHB 2184 also required that DNR submit to the legislature a literature review on the "carbon neutrality" of forest biomass. While most observers understand that CO₂ emissions from forest biomass combustion for energy, unlike fossil fuel combustion, recycles atmospheric carbon as part of the natural baseline global carbon cycle, the evaluation of carbon neutrality of forest biomass is determined by the boundaries in space and time considered most relevant to that evaluation. Four approaches to these boundaries are most commonly applied to the question, each yielding different conclusions about neutrality.

1. Nationwide scale, over time (taking the forest carbon cycle into account). This is the approach taken by the Intergovernmental Panel on Climate Change. In this approach, a determination of carbon neutrality for biogenic carbon emissions can be made so long as a nation's forest carbon stocks remain constant or increase over time.
2. Statewide scale, over time (taking the forest carbon cycle into account). This is the approach supported by Governor Gregoire and Commissioner of Public Lands Peter Goldmark. Neutrality exists so long as a state's forest carbon stocks remain constant or increase over time, as is the case in Washington State.
3. Facility supply circle scale, right now (at a single point in time, not fully taking the forest carbon cycle into account). With this approach, a determination of neutrality can be made only if the forests in a facility's supply circle are absorbing at least as much CO₂ as that being released from the stack at the point of emission.
4. Right here (single site), right now (present to future time period, not fully taking the forest carbon cycle into account). This is the approach taken by the recent study by the Manomet Center for Conservation Sciences in Massachusetts. With this approach, a determination of neutrality can be made only after the site from which the biomass was harvested has re-absorbed through subsequent tree growth the amount of CO₂ that may have been released at the bioenergy facility.

The Department of Natural Resources supports the approach wherein a neutrality determination for a state's greenhouse gas emissions from forest biomass energy production is made so long the state's forest carbon stocks are either stable or increasing. This is the case in Washington's forests. In addition, forest biomass energy production can have positive greenhouse gas results to the extent that it displaces energy production from fossil fuels. Combustion of fossil fuels releases new carbon into the atmosphere which has been stored in the earth's crust for millions of years.

Summary

Forest biomass can and should play a meaningful role in Washington's renewable energy sector. The Department of Natural Resources is moving forward with its forest biomass initiative thoughtfully in order to ensure sustainability as it continues to gain momentum in our state. To date, our work and the

work of our partners have demonstrated that a sustainable forest biomass-to-energy sector in Washington can:

- Reduce reliance on fossil fuels.
- Increase forest health and reduce fire hazards while protecting the forest environment.
- Reduce air emissions (utilizing the materials in a regulated environment as opposed to slash burns).
- Create green jobs and enhance rural economies.
- Increase industrial efficiency.
- Contribute to the development of drop-in replacement fuels.
- Reduce the risk of forest land conversion by providing land-owners with an additional revenue stream.

We look forward to continued partnership with the Washington State Legislature and other interested parties.

Introduction

Upon taking office in 2009, Commissioner of Public Lands Peter Goldmark launched the Department of Natural Resources' (DNR) Forest Biomass Initiative to demonstrate the utility of forest biomass as an energy feedstock. Since then, the initiative has grown into a significant contributor to Washington's renewable energy sector.

Since the initiative's launch, the agency has become an active participant in state-wide discussions related to renewable bioenergy development, rural economic development and green jobs. As a result of Commissioner Goldmark setting the agency on an aggressive trajectory to identify and engage opportunities for our state's forests to contribute to the development of Washington's renewable bioenergy resources, the agency has come forward as a state and national leader in bioenergy development.

Today, the Department of Natural Resources:

- Actively participates in the Washington State Department of Commerce led State Bioenergy Team. The team consists of agencies and stakeholder groups that have a hand in bioenergy development in Washington, and works to promote sound policy, research, and other actions that affect the further success of this sector.
- Has provided critical input, based on the lessons learned through the forest biomass pilot projects (See Section 1), that has helped to shape recommendations in the State Energy Strategy Update being delivered to Governor Gregoire and the Washington State Legislature in December 2010.
- Encourages the Energy, Transportation, and Climate (ETC) agency directors' coordinating group to consider the unique energy needs and opportunities for renewable energy generation available in our State's rural communities.
- Has provided input on federal policy proposals that will have significant impacts on both the State's and the Nation's bioenergy sector (EPA's "Tailoring Rule," biomass related provisions of the Federal Farm Bill, and ARRA funding).
- Has assisted in the development of Washington's renewable energy standards and contributed to State Capital Budget discussions related to biomass.
- Was an organizer of Washington's Bioenergy Symposium and Future Energy Conference – an event that brought together governments, businesses, and NGO's working on issues related to bioenergy development and the continued expansion of the State's renewable energy sector.

Additionally, the agency launched its Strategic Plan: 2010-2014 in April 2010. The plan's fifth major goal is to: "Develop Renewable Energy Resources on State Lands, Address the Challenges of Climate Change, and Create Renewable Energy Jobs." Action items in this goal include:

- Developing a renewable energy program for state lands.
- Analyzing renewable resources and job creation potentials for state lands.
- Implementing the Biomass Pilot.
- Implementing an active forest health program, linked to the forest biomass energy initiative, especially in eastern Washington.

This report is intended to provide the 2011 Washington State Legislature with a comprehensive update on the agency's Forest Biomass Initiative. It includes, but is not limited to, updates and reports required in the two pieces of enabling legislation that have passed since the initiation of this effort.¹

¹ SHB 2165 An act relating to authorizing the department of natural resources to conduct a forest biomass energy demonstration project; and, 2SHB 2481 Forest Biomass on State Lands.

Section 1. Forest Biomass Pilot Project Update (HB 2165)

In 2009, at Commissioner of Public Lands Peter Goldmark's request, the Washington State Legislature passed HB 2165 (See Attachment A), authorizing the DNR to implement forest biomass-to-energy pilot projects in order to demonstrate that "forest biomass can be used to generate clean, renewable energy" [HB 2165 (Section 1)].

Commissioner Goldmark and the legislature recognized that developing a forest biomass-to-energy project would involve numerous challenges. These challenges include supply availability (consistency and economic/ecological sustainability), product market development and incentive structures, and public policy. The pilot projects would be an opportunity to gain important information that is crucial to the long-term success of this emerging industry.

The legislation, in addition to authorizing demonstration pilot projects, asked that the Department of Natural Resources (the agency) submit a report in December 2010 detailing the information gathered and the lessons learned to date. This report will address the updates required in HB 2165 [Section 3 (1-5)].

In the summer after HB 2165 passed, the agency issued a Request for Letters of Interest seeking businesses or other entities that were interested in partnering with the agency as a biomass-to-energy pilot project. The DNR received responses from nearly 30 entities interested in working with the state to explore the opportunities in an expanding forest biomass market. Proposals covered a broad range of topics including:

- Co-producing electricity, bio-oil, and syngas using pyrolysis technology;
- Heating systems for public buildings and schools;
- Mobile units to produce bio-oil and bio-char;
- Pellet and bio-brick production for heating;
- Combined heat and power (CHP) systems at existing forest products manufacturing facilities.
- Production of electricity for sale to utilities to meet renewable portfolio standard requirements; and,
- Demonstration of in-forest biomass gathering systems to increase access/decrease transportation costs.

To select the projects that would move forward as pilots, the agency convened an advisory committee comprised of professionals with diverse expertise in the technology, research, conservation, forestry, and biomass energy fields in Washington and the region. Several key project attributes that were evaluated in the selection process included:

Scale. The selected pilots were truly of pilot scale. None required more forest biomass than the DNR was certain were available in the locations where they were located [HB 2165(1)(e)]. The agency recognized that until more comprehensive research has been conducted on ecologically and economically available supply, appropriate scale was critical to the success of the pilot program. Within this constraint, the agency aimed at demonstrating a range of scales.

Efficiency. The technologies selected as part of the pilots extracted the greatest energy value from the forest biomass. The agency is supportive of existing efforts in Washington to encourage facility efficiency. It was important to the evaluation committee that the systems being proposed not only demonstrate the utility of the feedstock, but were also examples of the state working to achieve industrial efficiency. As a package, the agency wished to demonstrate a diversity of biomass conversion technologies.

Location. In addition to the legislative provision prohibiting pilot sites that would interfere with supply areas for existing facilities, the agency wanted to place emphasis on siting the pilots in regions that both lacked processing infrastructure and were challenged by declining forest health. The agency also wanted to distribute selected pilots broadly across different regions of the state. The legislation required that at least one pilot be east and one west of the Cascades [HB 2165 Section 2(1)].

In January 2010, four projects were selected to move forward in the first phase of DNR's Forest Biomass Initiative: Nippon Paper, Inc.; Atlas Pellets; Borgford Bioenergy; and, Parametrix Inc.. The projects selected highlighted the Department's support of innovative and emerging biomass harvesting and processing technologies that can contribute to the most efficient use of the forest resource (with an emphasis on fuel production). Although HB 2165 indicated selection of two pilot projects, one in eastern and one in western Washington, DNR selected four pilots to provide a wider diversity of project types and to hedge against project failure.

Upon selection of the pilot projects, DNR convened implementation teams for each project to foster inter-agency collaboration and to provide partner agencies with an opportunity to highlight the work being done in their agencies to foster the expansion of the state's renewable energy portfolio. Each team had representatives from the following agencies: Department of Commerce, Department of Ecology, Governor's Office of Regulatory Assistance, and Washington State University. Teams also included representatives from local governments, NGO's supporting the projects, community organizations, consultants, air agencies, and others.

Pilot Project 1: Nippon Paper. Port Angeles, WA.

Project Summary

Nippon Paper is replacing its existing boiler with a biomass boiler to power the plant and to generate 20MW (megawatts) of renewable energy to be sold to local PUD's. The project is expected to create over 100 jobs during construction and at least 20 permanent jobs during the operation of the boiler. The company is scheduled to begin on site construction of the new boiler in June 2011, and will take advantage of federal incentive programs that sunset in January 2011.

Nippon submitted an Air Quality Permit application and is currently waiting air permit approval from the Olympic Region Clean Air Agency (ORCAA). The design of the new boiler must demonstrate compliance with all State and EPA air quality and health regulations. Nippon's designers have proposed an oversized particulate control device that will achieve the proposed EPA standards and provide 99.3% efficiency in removing particulates. In addition, Nippon will be installing a second pollution control device for particulate and acid gas removal. This device, a wet scrubber, will use direct contact water to remove additional pollutants. Additionally, the scrubber will help capture and recycle heat from the flue gas of the cogeneration process. This will improve the thermal efficiency for the project (bringing it above 68%) and further reduce fossil fuel consumption.

Since 2000, Nippon reduced fossil fuel usage by 88%. With this project they will reduce oil usage to virtually zero. The company's greenhouse gas emissions (GHG) are already below the 1990 baseline that was proposed by the Climate Change Conference in Kyoto in 1997. In 2001, Nippon installed a \$2

million dollar heat recovery unit on their existing boiler that made the mill more efficient and had the added benefit of reducing particulate emissions by 45%. With the new emission control devices proposed for this boiler, the mill will again significantly reduce particulate releases as well as provide the ability to reduce open slash burn emissions in a significant and positive manner.

Nippon submitted a 200+ page Environmental Impact Assessment (EIA) to the City of Port Angeles. The City approved the package.

Nippon Paper, Inc. plans to source its biomass from a combination of public and private landowners on the Olympic Peninsula. DNR is currently working with the company on a Letter of Intent articulating the agency's intent to enter into a long-term contract (See Section 2.) for forest biomass from DNR-managed lands on the Olympic Peninsula. Nippon will likely be a company with whom the agency pilots the newly granted authority to enter into long-term biomass supply contracts.

Total Project Budget: \$71M

Grants Received During Pilot Phase:

\$2M State Energy Program (SEP) Grant/Loan. The SEP grant that Nippon received was a critical step, demonstrating Washington State support to the parent company financing the remainder of the project.

Biomass Supply Need: 160,000 BDT/year

Supply Source: Public and private lands on the Olympic Peninsula.

Outcomes/Recommendations

Support efforts to streamline permitting of combined heat and power (CHP) projects.

CHP is one of the most efficient methods of utilizing forest biomass as an energy feedstock. Nippon Paper, Inc's CHP project, in particular, demonstrates the tremendous efficiency that can come from cutting edge CHP systems. DNR supports the proposal in the Department of Commerce's "2011 Biennial Energy Report with Indicators and Energy Strategy Update" for Efficiency programs for non-electric fuels:

"Industrial Energy Efficiency

- 7. Streamlined permitting of combined heat & power (CHP) projects.** Various studies have indicated a large quantity of industrial waste heat available that could be used to generate electricity in combined heat & power (CHP) or "cogeneration" installations. If the industrial entity financing the CHP installation is able to sell the resulting electricity into the grid a project often appears profitable, but permitting, regulatory or economic barriers can pose an insurmountable hurdle to implementation. Meanwhile, the U.S. EPA is developing a Waste Energy Recovery Registry according to requirements of the 2007 Energy Independence and Security Act, and Washington may benefit from preparing to respond to the CHP potentials revealed by the Registry.

In this initiative, Commerce will research the barriers to CHP deployment during calendar year 2011, and recommend a set of remedies that may include programmatic, regulatory or legislative solutions to be deployed in 2012."

Identify Incentives Programs for Highly Energy Efficient Facilities

The DNR supports efforts to identify and implement incentive programs for high efficiency CHP and other renewable energy projects. These could include creating a 1.2 multiplier for renewable energy certificates (RECs) produced from projects that have a high efficiency rating (e.g. > 60%), prioritizing

available grant funding for renewable energy projects to those that achieve efficiency goals, and streamlined permitting (see above).

Develop and implement a multi-agency biomass education and outreach effort.

The Nippon Paper project, supported by multiple state agencies as a prime example of positive renewable energy development, industrial efficiency, and climate change adaptation, has received both community support and some expressions of concerns related to air emissions and in-forest effects of biomass recovery. DNR, through the Interagency Biomass Coordination Team that was convened to move this initiative forward, will initiate an education/outreach effort to ensure that local community and Washington residents have access to accurate scientific information on bioenergy CHP projects in construction and being planned for the state.

Pilot Project 2: Atlas Pellets. Omak, WA.

Project Summary

Atlas Pellets proposed to update the existing pellet mill in Omak, install a new debarking and chipping system that can process products from forest health treatments and thinning activities, and produce pellets to be used by residents living in the Okanogan area. The pellet mill previously received sawdust from Precision Pine (now closed) and was forced to stop operations in July 2010 (laying off 12 employees). Without the new equipment and without a supply of their traditional feedstock, they could not continue to operate.

Concurrent to the Atlas Pellet mill looking to update their facility, three cities in the area applied for a Community Energy Grant intended to work in harmony with the updated mill. The cities of Omak, Oroville, and Okanogan, through the Institute for Washington's Future applied for and received a Community Energy Grant to develop a trade-out program to replace traditional woodstoves for high efficiency pellet stoves. Through the grant, the team is developing the tools (both educational and practical) to implement the program. Until the mill is updated, however, there will not be a local supply of pellets for residents currently dependent on wood heat in their homes. The costs of pellets that have been shipped from elsewhere is too high to induce residents to move away from their inefficient wood stoves to high efficiency pellet stoves.

Due to the significant lack of timber sector activity in North Central Washington and economic instability of the parent company, the mill was put up for sale in November 2010. DNR is waiting to see if a potential purchaser would be interested in continuing a relationship as a pilot project under DNR's Forest Biomass Initiative. If so, the project will continue as planned with the new mill owner; if not, the pilot will be concluded.

Total Project Budget: \$750,000.00

Grants Received During Pilot Phase: None. The project did not produce energy in the form of electricity (currently favored by existing funding programs). Because the parent company was struggling financially, they did not qualify for federal or state loan and/or loan guarantee programs.

The 2010 Washington State Legislature allocated \$750,000.00 in capital funding for forest biomass conversion equipment in regions needing both forest health treatments and rural economic development. Atlas could have competed for that funding and, if successful, could have used the funding to purchase the equipment needed to move the project forward. However, the legislature appropriated the funds from DNR's Natural Resources Equipment Revolving Fund, which is legally dedicated for use to purchase agency equipment on a reimbursable basis. Legal research by DNR concluded that this fund source is not authorized for use by private businesses.

DNR recommends the legislature shift the appropriation to the more suitable State Building Construction Account in the 2011 supplemental budget.

Biomass Supply Need: 24,000 BDT/year

Supply Source: Precision Pine Mill (closed) and local forest land-owners and residues from forest thinning/forest health treatments.

Outcomes/Recommendations

Ensure that rural energy needs are being addressed.

Atlas Pellets provided an opportunity to explore and expand a greenhouse gas reducing, non-grid based energy product (pellets) that could reduce the GHG and other air emissions produced in communities reliant on wood heat. It is unlikely that these residents will switch to electric heat, for economic and cultural reasons. Further exploration of climate friendly and culturally acceptable energy options will be an important next step in the State's efforts to reduce greenhouse gas emissions, increase energy independence, and promote renewable energy.

Focus funding on energy needs of rural communities and on rural energy development projects.

Atlas Pellets applied for a State Energy Program grant and was not awarded funds. The grant program focused on projects that would increase energy efficiency and/or produce energy for the grid. These are critically important elements of meeting the State's clean energy goals; however, they may not sufficiently apply to innovative rural energy entrepreneurs. A major lesson learned through the Atlas Pellets pilot project is that sufficient attention has not been paid to the needs of rural communities in Washington in addressing how policies and incentives can more effectively apply to their circumstances. The agency supports the proposal in the Department of Commerce's "2011 Biennial Energy Report with Indicators and Energy Strategy Update" for Efficiency programs for non-electric fuels (Residential and Commercial Buildings Package (17), pg. 15-16).

Identify opportunities for forest products infrastructure expansion in North Central Washington.

North Central Washington is facing significant forest health issues. It is important opportunities for reinvigorating existing and developing new forest product manufacturing infrastructure are thoroughly explored. Emphasis should be placed on projects that both expand infrastructure and address renewable energy needs of rural communities. USFS engagement will be critical to ensure that this goal be met.

Pilot Project 3: Borgford Bioenergy. Springdale/Kulzer, WA.

Project Summary

Borgford Bioenergy, based in Colville, Washington, has developed a slow pyrolysis system that converts forest residuals to biochar, bio-oil (that could be further refined into a liquid transportation fuel), and power (1 MW/pyrolysis unit). Recent studies by Washington State University (WSU) suggest that opportunities exist for biochar to be used as a soil amendment and a medium for carbon sequestration in agricultural applications. Borgford Bioenergy is collaborating with WSU and Pacific Northwest National Laboratory (PNNL) to do crop application analyses of the biochar that will be produced by this project.

The project consists of two sites: one in Kulzer, one in Springdale, Washington. To date, no work has occurred on the Kulzer site. Eventually, Borgford would like to install seven pyrolysis units at that site. Since being selected as a pilot, Borgford was able to purchase and re-open the Springdale Lumber Mill (which had been closed for 5 years). The mill is now operational and employs approximately 30 residents of Springdale, WA. The biomass burner to be installed at the Springdale Mill is being fabricated and is awaiting completion of the air permit process.

After being selected as a pilot project, Borgford Bioenergy had the support of multiple state agencies, local governments and universities. This network facilitated successful application for a State Energy Program (SEP) loan in the amount of \$750,000. The group has also been central in helping begin the process of securing the necessary permits the project will need. The Office of Regulatory Assistance provided Borgford with information about local engineering contractors to work on the project, to help him navigate the permitting process.

Because the technology being applied by the Borgford Bioenergy project is new (with no comparable technology having been permitted in the State of Washington, to date), much has been learned about the challenges that currently face businesses wanting to site their cutting edge technology in Washington. It has been challenging for the interagency project team and Borgford to collectively identify an effective path forward toward obtaining the necessary permits this project requires. These challenges have been effectively addressed in proposed actions contained in the Washington Department of Commerce's State Energy Strategy Update (See Outcomes/Recommendations).

The Borgford Bioenergy project tells a compelling story of rural entrepreneurship and rural economic development. Stevens County, home of the project, is an economically distressed community in Washington. A former Stevens County Commissioner said that Borgford's ability to bring the Springdale Mill back on-line helped prevent the town from un-incorporating. In a town with a population of around 200 people, the mill is currently employing over 30. The Borgford Bioenergy project is a tremendous example of a rural entrepreneur helping to keep his local economy vibrant.

Total project budget: \$16.4M

Grants Received During Pilot Phase:

\$4M United States Forest Service Stimulus Grant

\$750K State Energy Program (SEP) Loan

Biomass Supply Need: 70,000 BDT

Supply Source: Springdale Mill Residues

Outcomes/Recommendations

Tailor permitting processes for projects that utilize new and emerging technologies, while ensuring environmental protection.

Among lessons learned as part of this project, the requirements for air permitting appear to the interagency project team to be better matched to large traditional emission sources than to innovative and emerging technologies in small projects. Pre-construction characterization of emissions can be a challenge for small entrepreneurs introducing new technology. Up-front efforts to develop common expectations for critical process steps and for applicant capacity for engineering analyses are especially important. Because there is no other system like the Octoflame Burner (slow pyrolysis unit), identifying a path toward successfully obtaining an air quality permit has been challenging. As of publication, Borgford Bioenergy and its air quality consultant are preparing supplemental information to its air permit application for the Springdale lumber mill chipper/grinder. Borgford and its consultant are preparing to submit an air permit application for the Springdale slow pyrolysis unit after the chipper/grinder application is complete, and Ecology will process the application when it is submitted.

DNR supports the proposal in the Department of Commerce's "2011 Biennial Energy Report with Indicators and Energy Strategy Update" for Streamlined Permitting for Clean and Advanced Energy Technologies:

“Streamlined Permitting for Clean and Advanced Energy Technologies

When new generation does need to be deployed in Washington State, clean energy technologies should be preferred over conventional resources. This assists with meeting greenhouse gas targets, and furthers Washington's global leadership in advancing energy technologies. Likewise, advanced energy efficiency solutions need to be preferred over low-efficiency construction or equipment. The initiatives below can encourage renewables or other clean energy technologies by streamlining the permitting process associated with their deployment. All such streamlining will be done with due respect for the practical limits dictated by the grid's ability to accept intermittent generation. Streamlining also will never be deployed in a way that circumvents protections for the environment and cultural resources, which are primary purposes of the permitting regimes to begin with, and will be developed in close collaboration with the Department of Ecology, Department of Fish & Wildlife, and other agencies responsible for protecting those resources.

Washington innovators wishing to deploy pilot projects of new, experimental technologies find their projects must meet the same permitting requirements as a full-scale, conventional generating plant, despite the much smaller size of the pilot. The last two of the initiatives below focus on Washington's role as a leader in emerging energy technologies, by launching additional streamlining efforts for advanced technology pilot projects.

In Washington State, land use decisions are primarily in the hands of local governments. None of the initiatives below are intended to change this; they merely provide tools, authority or technical assistance to local governments to apply the streamlining concepts discussed; or they streamline state-level permitting steps that are already in place.

16. Accelerated permitting for pilot projects. Pilot energy generation or energy infrastructure projects, though smaller in scale than conventional generation or infrastructure projects, often find themselves faced by the same, substantial permitting requirements as a full-scale undertaking. By nature of their smaller size pilot projects are usually (but not always) less likely to have significant impacts; and furthermore it is in the state's interest to support our innovators by providing them the regulatory space to test new concepts.

This initiative begins as a research project consisting of a thorough mapping of the permitting process a pilot energy project goes through at state agencies, including timeframe associated with each step. This mapping will be done in close collaboration with the Department of Ecology, the Department of Natural Resources, the Governor's Office of Regulatory Assistance, the Energy Facility Site Evaluation Council and other agencies typically participating in project review. Next, Commerce will identify those steps that can be streamlined in the case of pilot projects, once again with due respect for the special suite of possible environmental impacts associated with each class of technologies. Finally, in those cases where Commerce and the regulating agencies can come to agreement on adjustments appropriate for pilot projects, Commerce will lead administrative, regulatory or legislative steps necessary to enable an appropriate, streamlined process. Any legislation called for would be introduced in 2012 at the earliest.

17. Energy technology test zones. The permitting load associated with energy technology pilot projects could be vastly reduced by designating one or more energy technology test zones in which pilot projects under a maximum size and within a certain class of technologies may be deployed with limited permitting requirements that would still ensure environmental compliance. Recently, for example, the federal government opened a Solar Demonstration Zone located on Bureau of Land Management lands in Nevada. The concept is also similar to “energy parks” established at a few locations around the world that co-locate various energy

research & development firms both to fertilize innovation among the inventors, as well as to allow easier deployment of test facilities.

Given the relatively few examples in the United States, this initiative would also begin as a research project examining prior attempts to create energy test zones, the policies leading to failure or success, and the landscape of local, state and federal laws in which such a test zone would need to be deployed. Commerce will simultaneously reach out to county and municipal governments to see if there is a willing, small-government partner, and reach out to firms innovating in the energy field who would have a strong interest in utilizing such a zone. Outcomes of this research will lead to a more concrete policy recommendation in next year's Full Revision of the State Energy Strategy. [State Energy Strategy, pgs. 17-20]"

Continue to facilitate stimulus and renewable energy grant funds going toward projects in rural communities in Washington.

Residents in Washington's rural communities are some of our country's most innovative. Borgford Bioenergy is an example of this grass roots innovation. This project would not have been possible without the assistance of stimulus dollars that had been passed through to Washington State. If additional funds are made available, it is important to facilitate a portion of these funds assisting local projects in our rural communities.

Recognize Rural Entrepreneurs Creating Jobs in their Communities

As Washington continues to move ahead with stimulus and clean energy projects, it is important to recognize the local people making a difference in the economic health of the state. One idea to explore is the possibility of establishing a recognition program for rural entrepreneurs engaging their communities in Washington's emerging clean energy and green technology sectors.

Pilot Project 4: Parametrix Inc. Bingen, WA.

Project Summary

Parametrix Inc., an environmental consulting firm headquartered in Auburn, Washington, partnered with Organix, Renewable Oil International and SDS Lumber to install a mobile fast pyrolysis unit on the SDS lumber site in Bingen, Washington for a 90-day trial of bio-oil production. Parametrix Inc. planned to explore refining and marketing options for the oil to determine if the system could be commercialized, with eight mobile units ultimately planned.

Parametrix Inc. convened a strong team that intended to explore the opportunities for liquid bio-fuel production through fast pyrolysis technology. Throughout the course of the project, the question emerged as to whether the technology had matured to the point that it was ready for commercialization. WSU researchers indicated that the technology would likely not be ready for commercialization until refining capacity in the state was expanded. Until then there is no market for the bio-oil that is produced.²

Parametrix Inc. applied unsuccessfully to several state and federal grant programs. They did not receive funding because they were neither a research and development project, nor were they of sufficient scale to be considered a commercial project. Because the project was unable to secure funding to move the project forward, it was concluded in November 2010.

² Currently, there is only one company, ENSYN (in Canada), commercially producing bio-oil from pyrolysis technology. They are using the oil as a food flavoring.

Total project budget: \$3.1M

Grants Received During Pilot Phase: None. The project was not classically an R&D project, nor was it ready for commercialization. As a result, it was in a 'valley of death' from a funding perspective: unable to obtain research dollars, unable to obtain build-out funds.

Biomass Supply Need: 1,900 BDT over a 90-day test period

Supply Source: Parametrix Inc. intended to use mill residuals from the SDS lumber mill during the course of the pilot.

Outcomes/Recommendations

Identify/create funding opportunities for projects currently in a transitional status from research to commercialization.

If Washington is to be a global leader in renewable energy technology development, we must ensure that funding is available to bring technologies not quite mature enough for commercialization into the stage of development that follows research. This pilot demonstrated that although we have tremendous research capacity in the state, we could improve our ability to bring those technologies to pre-commercialization.

Implement and Enforce a Renewable Fuel Standard in Washington State.

Market demand is central to the success of bio-fuel projects in the state. Until we have an enforceable renewable fuel standard in the State, it is unlikely that we will see significant investment in the necessary production/refining infrastructure. The agency supports the proposal in the Department of Commerce's "2011 Biennial Energy Report with Indicators and Energy Strategy Update" to amend Washington's existing Renewable Fuel Standard:

"Transportation Efficiency and Technology

Several efforts to directly address the energy demand and greenhouse gas emissions associated with transportation are under way at the Washington Department of Transportation, Department of Ecology, and elsewhere. However, a few aspects of enabling transitions in transportation can benefit from Commerce's unique capacities in growth management and energy policy.

11. Amend Renewable Fuels Standard. In 2006 the Washington State Legislature passed a renewable fuels standard requiring gross diesel fuel sales statewide to consist of at least 2% biodiesel before December of 2008.³ This mandate has not been achieved due in part to a lack of legislated enforcement authority, but also due to the high administrative burden associated with a volumetric requirement such as that legislated in 2006, versus the universal requirement that has been much more successfully legislated in other states.⁴ Washington State is home to an innovative and motivated, nascent biodiesel industry; a more successful biodiesel standard would encourage further development of this industry in the state.

Commerce proposes to support reasonable legislation brought to the 2011 session that converts the existing, volumetric renewable fuels standard to the universal type that has been proven by the prior work of other states. [Transportation Package (11), pg. 13]."

Utilization of the state's forest biomass resources for energy production can generate revenue and increase asset values of state forest lands, protect forest land of all ownerships from severe forest health problems, stimulate Washington's economy, create green jobs, and reduce Washington's dependence on foreign oil.

³ ESSB 6508. The renewable fuels standard also sets targets for ethanol in gasoline sales, but these targets have been rendered moot by more recent, aggressive federal targets.

⁴ A volumetric mandate requires that a minimum fraction of total, annual fuel sales consist of the renewable fuel. Verifying a volumetric mandate requires certification and tracking of all blendstocks entering the fuel supply throughout the year. A universal mandate requires that fuel dispensed at any pump at any time contain a minimum fraction of the renewable fuel, and can be verified by random testing.

Section 2. Long Term Supply Contracts and Statewide Supply Assessment

Long Term Supply Contracts for Forest Biomass from DNR-Managed Lands

DNR has heard from numerous potential forest biomass project developers about their needs, including the need for a reliable supply of biomass feedstock. As the pilot projects moved ahead and the Forest Biomass Initiative gained momentum, the need to contract forest biomass through long-term contracts became evident. To obtain financing, project developers stated a need for a guarantee of at least 10-20 years of supply. Where forest biomass supply was envisioned to come from state owned forest land managed by DNR, DNR's typical two-year timber sales contract and spot sales of forest residuals were identified as a barrier. In response to this feedback, DNR requested that the Washington State Legislature authorize the agency to use longer term contracts for biomass sales. In 2010, 2SHB 2481 passed both chambers almost unanimously (See Attachment B).

The bill authorizes the agency to enter into contractual agreements with businesses to convey forest biomass from public lands in five ways:

- The agency may authorize the separate sale of biomass within timber sale contracts or outside of those contracts.
- The agency may enter into long-term competitive contracts for forest biomass for an initial term of up to five years with the opportunity for three additional five-year contract renewals.
- The agency may enter into direct sales contracts without public auction based on procedures adopted by the Board of Natural Resources to ensure market pricing and accountability.
- The agency may enter into a fifteen year initial contract term for biomass with contracting entities making a qualifying capital investment of at least \$50M under certain circumstances.
- The agency may lease state lands for the purpose of the "sale, exploration, collection, processing, storage, stockpiling, and conversion of biomass" into energy and energy products.

The effects of the legislation are significant in that long-term contracts provide investors with the necessary information to secure funding for commercial-scale forest biomass-to-energy projects where state-owned forest lands are to be a significant source of supply. These authorities also provide a clear framework for DNR to contribute to renewable energy development in a way that is environmentally sustainable, generates new revenue for trust beneficiaries, creates jobs and helps maintain working forests.

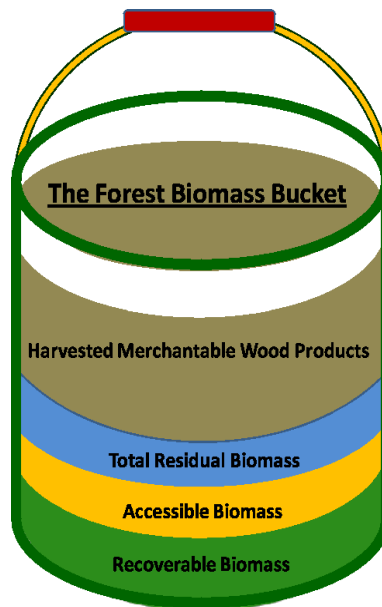
Since the bill's passage, a number of businesses have expressed interest in long-term contractual arrangements for forest biomass from DNR managed state trust lands. Each option for transacting biomass authorized under the bill requires critical development work by the agency. DNR is working to complete steps necessary to exercise this new authority, although significantly reduced staff and budget resulting from declining DNR timber sale revenues have slowed progress.

The legislation requires that DNR complete the following steps prior to exercising the authority to enter into long-term contracts for biomass from DNR lands. Below is a summary of these steps and an update on the agency's progress toward completion:

1. Prior to entering into long-term contracts for biomass from public lands, the agency must "complete an inventory of the available biomass in the area that will be subject to the agreement" [2SHB 2481 Section 2(1)]. Note: This requirement does not apply to the pilot projects.
2. Develop new contract documents, new clauses for existing contracts and new contracting methods.

3. Allow for differentiation between timber and forest biomass products to sell biomass under existing timber contracts.
4. Develop the procedures required for biomass contracts. The procedures must: Ensure that biomass being harvested from public lands is done so in a manner that “retains organic components of the forest necessary to restore or sustain forest ecological functions;” include “utilization standards and operational methods in recognition of the variability of on-site conditions;” authorize the agency to “unilaterally amend the volume to be supplied” with six months notice to the contracting party.
5. Develop procedures for Board of Natural Resource adoption, for direct sales of forest biomass without public auction; that ensure a competitive market price and accountability.

The agency, through a combination of funds from the United States Forest Service (See below) and land management funds hired a project staff to do the work necessary to exercise our new authority to enter into long-term supply contracts. New contract documents are being developed for specific biomass-only harvests. Current timber sales procedures and contracts are being evaluated for the potential application of biomass contract sales. The new documents and procedures will allow for differentiation between timber and forest biomass products under existing timber contracts. The procedures for direct sales without public auction are currently being developed. The DNR is also evaluating long-term contracts for pilot projects. New staff resources will continue to help progress in developing the procedures for biomass contracting authority. Biomass long-term contracts and direct sales procedures will continue development in 2011.



Of the total biomass available in our forests, only a small portion is recoverable for use as an energy feedstock. (Oneil, pg. ii)

Statewide Forest Biomass Supply Assessment

As mentioned above, prior to entering into long-term contracts for forest biomass from state managed lands, DNR must first assess the available supply of biomass in the contract area (See 2SHB 2481, Section 2). In 2010, DNR sought and ultimately received a \$1M grant from the U.S. Forest Service (USFS), a portion of which has been allocated to a statewide forest biomass supply study (See HB 2164, Section 4).

The study will help assess forest biomass availability and sustainability throughout Washington State on all forest land ownerships, including state-owned lands, as well as fulfill specific legislative requirements. The grant will, in addition to the supply study, enable DNR and partners to test methods for making forest biomass material available from broad, multi-landowner areas with the aim to improve the economic feasibility of protecting forests from wildfire and restoring forest health.

The forest biomass supply assessment will build on previous biomass supply analyses, refining and improving upon them by using finer-scale data and evaluating individual land managers' objectives, operational and economic factors for biomass availability, and environmental sustainability. A range of supply estimates will be developed encompassing all forestland owners statewide, and will further break down these estimates within a series of logical supply tributary areas.

The study approach will include the following methodological elements to determine what volume of biomass from Washington forests is both economically and ecologically available:

- Stratification of the relevant components of the supply assessment by landownership categories (federal, state, tribal, large private industrial, large private non-industrial, small private), forest ecosystem type, species (or, at a minimum, hardwood and softwood), logical supply areas across the state, and time periods in decades.
- Recent trend and projected acres and volume of timber harvest used to determine estimated residuals left on-site and the physical characteristics of harvest residuals.
- Projections of biomass that could result from pre-commercial thinning, forest health and fire fuel reduction treatments, salvage operations, and other origins.
- Estimated volume, physical characteristics, and distribution of material, live and dead, under a reasonable range of on-site retention levels to protect soil productivity, water quality, fish and wildlife habitat, and other ecological functions. These shall, at a minimum meet current Washington State rules under the Forest Practices Act (RCW 76.09).
- Analysis and estimate of the operationally feasible volume, cost, and quality of removed biomass under a range of reasonable removal scenarios.
- An estimate of the cost of various modes and distances of transportation to the given processing facility locations.
- An estimate based on currently available information, of a range of the prices in \$/ton for delivered biomass matched to various biomass physical quality characteristics.
- Summary estimates of the volumes, origins, and physical characteristics of biomass, which could be ecologically and economically removed from forest lands in Washington on a long-term sustainable basis, including any key trade-offs involved, based on the preceding analysis results..
- Results will be aggregated to statewide estimates by biomass origin and landowner category.

The project will also result in the development of a biomass calculator tool that allows for customized biomass availability estimates based on user-defined inputs. This tool will be made available to the public and will be utilized by the agency in developing long-term supply contracts for forest biomass from DNR-managed lands.

Because 2SHB 2481 requires DNR to complete a biomass supply assessment before entering into long-term contracts for biomass supply from DNR managed lands, an aggressive timeline for the project has been developed. After a competitive Request for Proposals and careful analyses of proposals and bids received, in November DNR selected the University of Washington, School of Forest Resources (who will be working with TSS Consultants) to conduct the research. The project is scheduled for completion by August 2011, with interim reports provided to the agency throughout the research process.

Section 3. Ecological Implications of a Forest Biomass-to-Energy Sector

Since the passage of HB 2165, and as public awareness of forest biomass as a potential renewable energy feedstock has grown, concerns have been raised about the effects a forest bioenergy sector will have on Washington's forest ecosystems and the environment generally. These concerns range from the greenhouse gas implications of the utilization of forest biomass as an energy feedstock (See Section 4. Carbon Neutrality Analysis) to concerns that forests will be harvested down to bare soil to 'feed' the facilities that are using or that intend to use forest biomass as an energy feedstock.

Washington State has included forest biomass in its statutory definition of 'renewable resource,' for purposes of qualifying for renewable energy credits:

"Renewable resource" means:

- (i)...solid organic fuels from wood, forest, or field residues... that do not include (i) wood pieces that have been treated with chemical preservatives....; (ii) black liquor byproduct from paper production; (iii) wood from old growth forests....(RCW 19.285.030 (18))"

In order for energy projects to utilize forest biomass as a feedstock and count their energy towards the State's Renewable Portfolio Standard (RPS) requirements, those limitations will need to be met. Additionally, economics currently do not support the use of whole logs for energy production. Currently, a truck-load of biomass is valued at approximately \$20/green ton; timber is approximately \$70/green ton.

Understanding both the state's definition and the economics supporting the industry are central to clarifying what types and origins of biomass will and what will not be used in bioenergy production.

Forest biomass will most typically consist of:

- Residual branches, needles, and tree tops (called "slash") left over from ongoing logging operations.
- Products of pre-commercial thinning (small saplings from overcrowded young forests).
- Tree stems and tops thinned from forests that are at risk from wildfires, insects, or diseases (forest health treatments) that are not currently utilized.
- Clean, untreated wood construction and demolition waste that would otherwise have gone to a landfill.
- Unused material from lumber mills, such as sawdust, shavings, chips or bark.

Forest biomass will not typically consist of:

- Traditional timber or whole trees that would otherwise be made into lumber, paper, or other products by existing industry. It's possible that small numbers of low quality logs could be utilized by biomass facilities, pulp and paper mills, or other facilities, depending on cyclically changing market prices.
- Downed logs and standing dead trees (snags) required to be left on site by forest practice regulations; material incorporated into the forest floor; stumps.
- Wood products treated with chemical preservatives, such as creosote or "green-treated" lumber.
- Wood and wood products from old growth forests.

The utilization of forest biomass is helping to generate energy from a product that had previously been seen as waste and either burned on-site in a "slash-burn" or left to biodegrade in a slash pile.⁵ In so

⁵ Lee, Carrie et. al. "Greenhouse gas and air pollutant emissions of alternatives for woody biomass residues." Stockholm Environmental Institute. Olympic Region Clean Air Authority. November 2010.

doing, rural jobs are being created, rural economic vitality is being enhanced, and renewable energy is being produced.

To further ensure that forest biomass removal does not negatively impact the forest ecosystems from which it is being drawn, Washington's Forest Practices Board, in August 2010, asked for "forest biomass removal" to be added to the definition of "forest practice" in rules adopted by the Board under the authority of the State's Forest Practice Act. Rule making is currently underway. The proposed revised definition reads as follows:

"'Forest practice' means any activity conducted on or directly pertaining to forest land and relating to growing, harvesting, or processing timber or removing other forest biomass, including but not limited to:

- Road and trail construction;
- Harvesting, final and intermediate;
- Precommercial thinning;
- Reforestation;
- Fertilization;
- Prevention and suppression of diseases and insects;
- Salvage of trees; and
- Brush control.

'Forest Practice' shall not include: forest species seed orchard operations and intensive forest nursery operations; or preparatory work such as tree marking, surveying and road flagging; or removal or harvest of incidental vegetation from forest lands such as berries, ferns, greenery, mistletoe, herbs, mushrooms, and other products which cannot normally be expected to result in damage to forest soils, timber or public resources."

Whether this rule change will be sufficient to ensure that ecosystem health is not negatively impacted by biomass harvest is an issue currently being discussed by the Washington's Forest Practice Board and will largely be determined by the forest practices Adaptive Management program.

Section 4: Carbon Neutrality of Forest Biomass

“In the long-term, a sustainable forest management strategy aimed at maintaining or increasing forest carbon stocks, while producing an annual sustainable yield of timber, will generate the largest sustained mitigation benefit.”

-Intergovernmental Panel on Climate Change (IPCC), Fourth Assessment Report-

Clean and renewable energy continues to expand its role in Washington’s energy sector. Examining the impacts of these new technologies on greenhouse gas concentrations in the atmosphere that contribute to climate change has become increasingly important. In 2SHB 2481 of the 2010 session, the Washington State Legislature directed the Department of Natural Resources (DNR) to “conduct a survey of scientific literature regarding the carbon neutrality of forest biomass. The department [is to] submit the survey results with any findings and recommendations to the appropriate committees of the legislature by December 15, 2010” (2SHB 2481 New Section 13).

This section provides a review of the discussions currently underway relating to the carbon neutrality of forest biomass as a renewable energy feedstock. This paper does not intend to provide original research on the topic; rather, its purpose is to provide a summary of the approaches currently being employed to address the question and to articulate the DNR position on the issue.⁶ We have included, at the end of this document, a bibliography of the Works Cited in this section, as well as an expanded bibliography which includes other references that support one or more of the approaches outlined below in determining the carbon neutrality of forest biomass in energy production.

Information about the current policy landscape and the technological opportunities available for processing woody biomass provide important context for understanding both the approaches that will be described, as well as the Department’s position. This paper does not intend, however, to provide a comprehensive treatment of either. Rather, the focus is on the range of recently expressed viewpoints on the topic of the carbon neutrality of forest biomass as an energy feedstock.

Forest Biomass and Public Policy

The use of forest biomass as an energy feedstock poses unique challenges for policy-makers: should the “biogenic” emissions – those resulting from the utilization of forest biomass and other plant-based fuel sources – be accounted for as arising from land use activities like forestry and farming, or as emissions from energy facility smoke stacks and auto tailpipes? How does the effect on atmospheric greenhouse gas emissions (GHG) from forest biomass use for energy compare to the effect from fossil carbon that is being reintroduced in the atmosphere? How are Washington’s forest resources protected in harvesting forest biomass for use as an energy feedstock? A clear and consistent policy approach is necessary to avoid inaccurate emissions accounting and to ensure that forest biomass harvest does not occur in a way that is detrimental to Washington’s forestlands.

Since the early 1990s, biogenic emissions have been considered carbon neutral by numerous state, national, and international policies. It was only recently suggested⁷ that biogenic emissions (emissions that result from forest biomass) be accounted for in the same manner as are fossil based emissions. The following provides a brief overview of the policy landscape that has shaped this discussion.

Intergovernmental Panel on Climate Change (IPCC)

⁶ 2SHB 2481 Forest Biomass on State Lands.

⁷ U.S. Environmental Protection Agency. (2010c). Final Rule: Prevention of Significant Deterioration and Title V. Greenhouse Gas Tailoring Rule, Fact Sheet. U.S. Environmental Protection Agency 6 p. Washington, DC. Available online at www.epa.gov/nsr/documents/20100413fs.pdf

The international community has been accounting for GHG emissions for a number of years under commonly accepted protocols. The Intergovernmental Panel on Climate Change has concluded that emissions from biomass utilization "...should not be included in national CO₂ emissions from fuel combustion. If energy use, or any other factor, is causing a long term decline in the total carbon embodied in standing biomass (e.g. forests), this net release of carbon should be evident in the calculation of CO₂ emissions described in the Land Use Change and Forestry (LUCF) chapter."⁸ Thus, so long as a nation's forest stocks remain constant or increase from year-to-year, the emissions associated with forest biomass are carbon neutral (or at least 'lower carbon'⁹). The GHG emissions status of a nation's forest resources results from the net effect of forest growth (sequestering carbon), forest harvest resulting in long-lived or short-lived wood products, and loss to fire and other disturbances such as insect kill (emitting carbon), as well as the conversion of forest land area to non-forest uses (emission) and the afforestation of new land (sequestration).

The United States government has adopted the IPCC approach to account for biogenic emissions on a non-regulatory basis. The GHG emissions from biogenic sources are considered carbon neutral so long as, consistent with IPCC recommendations, the nation's forest stocks remain stable or increasing. Washington State, consistent with this approach, requires that industrial facilities utilizing forest resources as an energy feedstock report their emissions; however, these emissions are not added to the State's cumulative total under the status of national neutrality.¹⁰

United States Environmental Protection Agency "Tailoring Rule"

The IPCC approach has been recently revisited by the United States Environmental Protection Agency (EPA), under authority of the Clean Air Act, through its "Tailoring Rule." In the rule, EPA posed the question as to whether, under the Clean Air Act; CO₂ emissions from biogenic sources should be counted as equivalent to those from fossil sources. This approach, counter to the approach offered by the IPCC, looks solely at emissions as originating from stacks and similar technological sources, rather than looking at land use as a whole. This approach neglects two primary ways that GHG's from forest biomass differ from those that come from fossil sources (the differences that formed the basis for the IPCC approach):

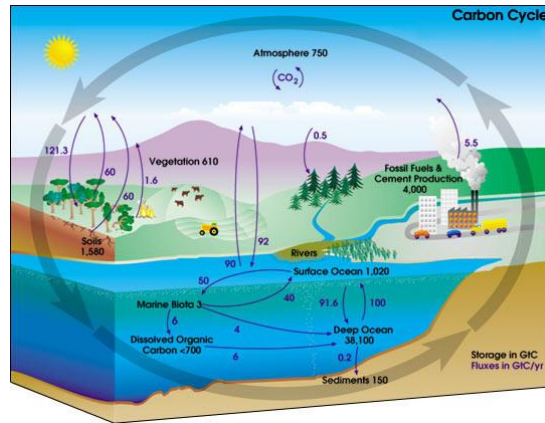
1. Biogenic CO₂ emissions are not new to the atmosphere. Biogenic emissions are a natural part of the earth's carbon cycle¹¹. Biogenic emissions may arrive into the atmosphere through a number of avenues including plant decomposition, wildfire, deforestation, and utilization in energy production. The emissions that result from these events are balanced by the simultaneous re-absorption by forests and other vegetation, as part of the continuous forest carbon cycle. Fossil based emissions are not associated with a re-absorptive capacity.

⁸ IPCC 1996, Vol. 3, p. 1.10

⁹ O'Laughlin, Jay. *Accounting for Greenhouse Gas Emissions from Wood Bioenergy*. University of Idaho, College of Natural Resources. Report No. 31. September 13, 2010.

¹⁰ RCW 70.94 Washington Clean Air Act

¹¹ The forest carbon cycle is the natural process "where billions of tons of atmospheric CO₂ are removed from the atmosphere by oceans and growing plants, also known as 'sinks,' and are emitted back into the atmosphere annually through natural processes also known as 'sources'" (<http://www.epa.gov/climatechange/emissions/co2.html>).



Courtesy NASA Source: http://earthobservatory.nasa.gov/Library/CarbonCycle/carbon_cycle4.html

2. The baseline level of biogenic emissions over time is dependent on the overall size of the biological system and that system's capacity to sequester carbon. There is no comparable system for reabsorbing CO_2 from fossil sources.

Governor Christine Gregoire and Commissioner of Public Lands Peter Goldmark submitted a joint letter to Lisa Jackson, Director of the US Environmental Protection Agency,¹² requesting that the approach being proposed be reconsidered. In the letter they recommended that state-level carbon neutrality determinations, based on objective tracking of the volume of a state's forest resources, be used to determine the need for stack regulation.¹³ This approach ensures that, on a state level, biogenic CO_2 emissions do not exceed forest stock sequestration capacity.

On November 10, 2010, the U.S. Environmental Protection Agency (EPA) made available resources and guidance to permitting authorities as they implement their Clean Air Act (CAA) permitting programs for greenhouse gas (GHG) emissions. These tools include guidance on implementing the Prevention of Significant Deterioration (PSD) and Title V Operating Permit Programs for GHGs, and technical resources to assist states and sources in identifying control measures for GHG emissions.

The guidance "notes that biomass could be considered Best Available Control Technology (BACT) after taking into account environmental, energy and economic considerations and state and federal policies that promote biomass for energy-independence and environmental reasons."¹⁴

Washington's Forest Practice Act

In addition to the debate over how air quality and global climate policy should handle biogenic GHG emissions and their net impacts on atmospheric GHG concentrations, concerns related to the ecological sustainability of the utilization of forest biomass as an energy feedstock have also been raised. These concerns cover topics ranging from ecosystem health to soil and water implications of increased harvest of forest biomass.

Although the harvest of forest biomass in Washington is currently being regulated under the State Forest Practice Act, the Washington Forest Practices Board is considering amending the definition of "forest practice" in Washington's Forest Practice Rules to include forest biomass so that there is clear regulatory

¹² Letters to Environmental Protection Agency (EPA) Administrator Lisa Jackson indicating concern about the impacts of the "tailoring rule" on bioenergy projects in Washington were sent from Governor Gregoire and Public Lands Commissioner Peter Goldmark (September 10, 2010), nearly the entire Washington Congressional delegation (July 2010), the Western Governors' Association, and industry groups across the state.

¹³ See Approach #2 below.

¹⁴ EPA GHG Guidance Fact Sheet. Online at <http://www.epa.gov/nsr/ghgdocs/ghgpermittingtoolsfs.pdf>

authority (See proposed rule change in Section 3., Ecological Implications of a Forest Biomass-to-Energy Sector).

Under current Forest Practice Rules forest biomass removal is almost always viewed by landowners, operators, and DNR, as a forest practice. The Forest Practice Board will likely adopt the revised rule, removing any uncertainty that harvesting forest biomass must comply with all of Washington's existing forest practice rules currently governing traditional timber practices.

Other Federal and State Laws

National and state renewable energy policies support the use of forest biomass as a renewable energy feedstock. The Energy Independence and Security Act of 2007 requires significant increases in the volume of cellulosic biofuels through the year 2022. Additionally, millions of dollars were allocated for Research and Development, and deployment of bioenergy projects throughout the country. In Washington, under Chapter 194-37 WAC Energy Independence, forest biomass is included in the definition of "renewable resource" (WAC 194.37(25)(i)(i-iii) and can be counted towards a utility's renewable energy requirement. The state also requires that 2% of diesel sold in the state be from biological sources.¹⁵

Additionally, to ensure that the use of forest biomass for energy moves forward in a manner that is both ecologically and economically sustainable, the WDNR has launched a state-wide forest biomass supply assessment that will determine the sustainable (economically and environmentally) volumes of forest biomass from each region the state. This study will guide policy-makers in regards to issues related to scale, location, and ecological implications of future forest biomass-to-energy projects. See Section 2 for more information on WDNR's Forest Biomass Supply Assessment.

Addressing the conditions of the existing policy landscape surrounding the utilization of forest biomass as an energy feedstock is essential in understanding the dialogue and approaches being applied to the question of carbon neutrality of forest biomass in renewable energy¹⁶ production.

Approaches to Analysis of Carbon Neutrality of Forest Biomass in Bioenergy Production

Defining the Spatial and Temporal Parameters

As forest biomass utilization has increased through efforts to promote and encourage renewable energy production in Washington State and nation-wide, the previously accepted assumption of 'carbon neutrality' of forest biomass in bioenergy production has been questioned. All conclusions related to the carbon neutrality (or not) of forest biomass as an energy feedstock ultimately stem from the boundaries in time and space used in an evaluation. When these parameters are not consistently applied, confusion ensues. Where these parameters are set largely determines whether forest biomass utilization in bioenergy production is, or is not, considered carbon neutral. Because the varying approaches to examining the question of carbon neutrality are inconsistent, the result has been significant confusion around the beneficial uses and the neutrality (or not) of forest biomass in bioenergy production.

Existing research and policy conclusions are based on a wide range of spatial parameters:

- Single plot
- Multiple plots,
- Supply circle, region, bioregion,
- State,
- Nation.

¹⁵ Chapter 19.112 RCW Motor fuel quality act

¹⁶ Chapter 194-37 WAC Energy Independence Act. (Initiative 937).

In addition to geographical boundaries, conclusions are also based on the time periods that are used. These parameters range from the forest carbon cycle over time (past, present, and future), or a subset of time within the cycle (only today, today and the future, the past through today). Viewing the whole cycle through time (past, present, and future), one accounts for all the carbon a tree has sequestered in its past lifetime up to the point of harvest in the present and balances this with the CO₂ that may be released through its harvest and the utilization of the residuals. An alternative view of the cycle could include the period from when the tree is harvested in the present and when the biogenic CO₂ is withdrawn from the atmosphere by sequestration in future tree growth.¹⁷ Each perspective on relevant time periods and geographic areas, and combinations of the two, results in significantly different conclusions about neutrality.

The following summarizes four primary approaches that have been taken to evaluate the carbon neutrality, or not, of forest biomass utilization as an energy feedstock. Each, as is noted, applies different time periods and geographic areas and, in so doing, results in significantly different conclusions. The approach that has the support of Washington State and the Department of Natural Resources is identified.

Approach #1: Nationwide, Over Time (Past, Present, and Future)

In the nationwide approach, the relevant geographic area is the nation as a whole. Here neutrality is determined by the combination of the maintenance of a nation's forest stocks (based on the view that that forests have sequestered carbon in the past, are sequestering carbon now, and will sequester carbon into the future) coupled with an analysis of the emissions that result from the utilization of residual forest biomass resources in energy production and other natural and human-caused sources of forest emissions. So long as the forest resource base remains the same or increases, there is a determination of neutrality.

This approach to carbon neutrality determination has been applied by the IPCC. Stated simply, the utilization of forest biomass as an energy feedstock can be considered carbon neutral so long as the total forest resources are determined to be stable or increasing.

¹⁷ Lee, Carrie et. al. "Greenhouse gas and air pollutant emissions of alternatives for woody biomass residues." Stockholm Environmental Institute. Olympic Region Clean Air Authority. November 2010.

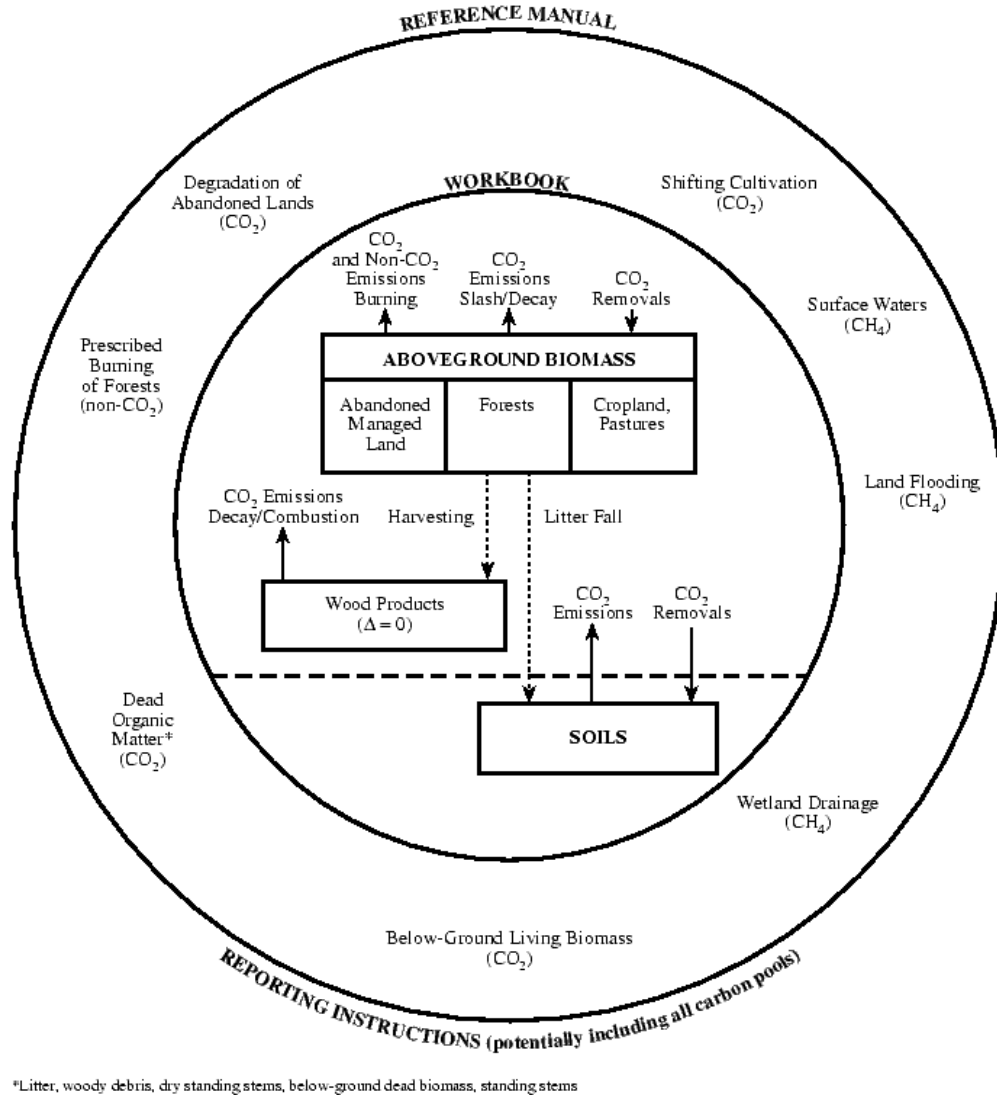


Figure 6-1: Structure in the IPCC Guidelines to account for national changes in carbon pools. The Reference Manual describes all activities within the outer and inner circles. The Workbook accounts for all changes in pools due to activities within the inner circle only. Emissions and removals of greenhouse gases can be reported within the Reporting Instructions.¹⁸

Applying the IPCC’s approach to determining whether the use of forest biomass is carbon neutral in the United States results in a neutral (if not, carbon positive) finding. “Land use, land-use change, and forestry activities in 2008 resulted in a net C sequestration of 940.3 Tg CO₂ Eq. (256.5 Tg C). This represents an offset of approximately 13.5 percent of total U.S. CO₂ emissions. Total land use, land-use change, and forestry net C sequestration increased by approximately 3.4 percent between 1990 and 2008. This increase was primarily due to an increase in the rate of net C accumulation in forest C stocks.”¹⁹ Central to this finding is the maintenance (or increase) over time of the forest cover and the carbon density in the forests, in the United States (or any country being evaluated). If, at some point, utilizing this approach, it is determined that a nation’s forest (carbon) resources are decreasing, the finding of neutrality will no longer apply.

¹⁸ IPCC Guidelines (6.1.1).

¹⁹ EPA GHG accounting report: U.S. EPA # 430-R-10-006. <http://www.epa.gov/climatechange/emissions/usinventoryreport.html>

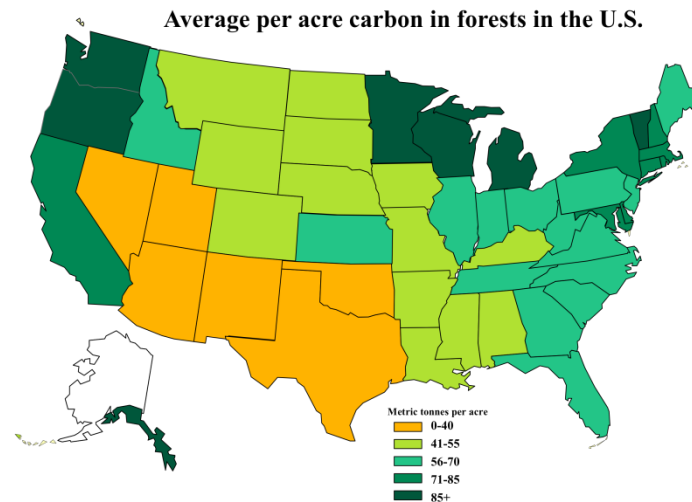
This approach, although a useful tool in crafting international protocols and national policies, poses numerous regulatory challenges to implementers on state and local levels. Because states implement federal air quality regulations, national findings do not address state-specific policies aimed at addressing a state's unique conditions and challenges. This approach can also mask poor practices in states with less strict regulatory landscapes than Washington because the states with stricter policies will neutralize the poor performers through the nationalization of the data.

Approach #2: Statewide, Over Time (Past, Present, and Future)

The statewide geographic area coupled with a "past through future" time period looks at the CO₂ balance occurring on all of the lands in a given state over time (past, present, future). It is similar to the nationwide perspective described in Approach #1, except for a state-based geographic boundary. Neutrality is determined by the combination of the maintenance of a state's forest carbon stocks (assuming that forests have sequestered carbon in the past, are sequestering carbon now, and will sequester carbon into the future) coupled with an analysis of the utilization (both existing and planned) of residual forest biomass resources and other natural and human-caused sources of forest emissions. So long as the forest carbon resource base remains the same or increases, there is an assumption of neutrality.

GHG emissions from individual facilities need *not* be the evaluation point under this approach, since it is assumed that *so long as* a state's carbon stocks remain constant, the amount of CO₂ being emitted through bioenergy generation is being balanced by the state's forests' continual re-absorption of CO₂ from the atmosphere.

Washington's forests are some of the most carbon rich in the world and are continuing to increase. "The U.S. Forest Service provided its first 'snapshot' of how much carbon trees store at state and regional levels in new figures released [Friday, October 15, 2010]. Washington, Oregon, Minnesota, Michigan, Wisconsin and Vermont ranked highest in terms of average carbon stored per acre, trapping upward of 85 metric tons in an average forestland acre, the analysis found."²⁰ (Climate Wire, Oct.18, 2010).



United States Forest Service, October, 2010.

²⁰ Climate Wire, Forests: New analysis details trees' carbon storage at state level, Monday, October 18, 2010

This approach is consistent with recommendations made by Governor Christine Gregoire and Commissioner of Public Lands Peter Goldmark in a letter jointly submitted to the US Environmental Protection Agency (EPA) in response to the EPA's call for information in relation to the "Tailoring Rule."²¹

"...We recommend that the authority and responsibility for regulating biogenic GHG emission sources be triggered by an objective finding as to whether a system's biological stocks are increasing, decreasing, or stable over a given time interval. If systems are stable or increasing, any emissions associated with these systems are not new GHGs and are continually subject to re-sequestration. Conversely, for systems whose stocks are decreasing, emissions associated with these systems represent emission levels that will not be readily re-sequestered and their sources should be regulated while that stock condition persists.

This logic requires that a clear distinction is drawn between the scale and legal mechanisms for objective findings on stock system changes, and those for source regulation. Until and unless a system's threshold of decreasing stocks is crossed, source-specific application of Best Available Control Technology (BACT) is inappropriate. Essentially, we suggest that the first, best, and most relevant BACT is biological systems' stocks that are in an increasing or stable condition. Only in the case that this control should fail would supplemental source-based technologies and controls be applicable.

Furthermore, we suggest that the appropriate scale of objective stock status findings is at the state level. This scale acknowledges the variation among and within major biological systems such as forests and agricultural lands, differing rates of stock fluxes and overall sequestration capacity."²²

It is also important to note that Washington's existing Forest Practice rules require that forest be replanted after harvest, thus ensuring the continued sequestration capacity of forests under this approach to a neutrality determination.²³

Approach #3: Facility Supply Circle (Multiple Plots), Right Now (Time Zero)

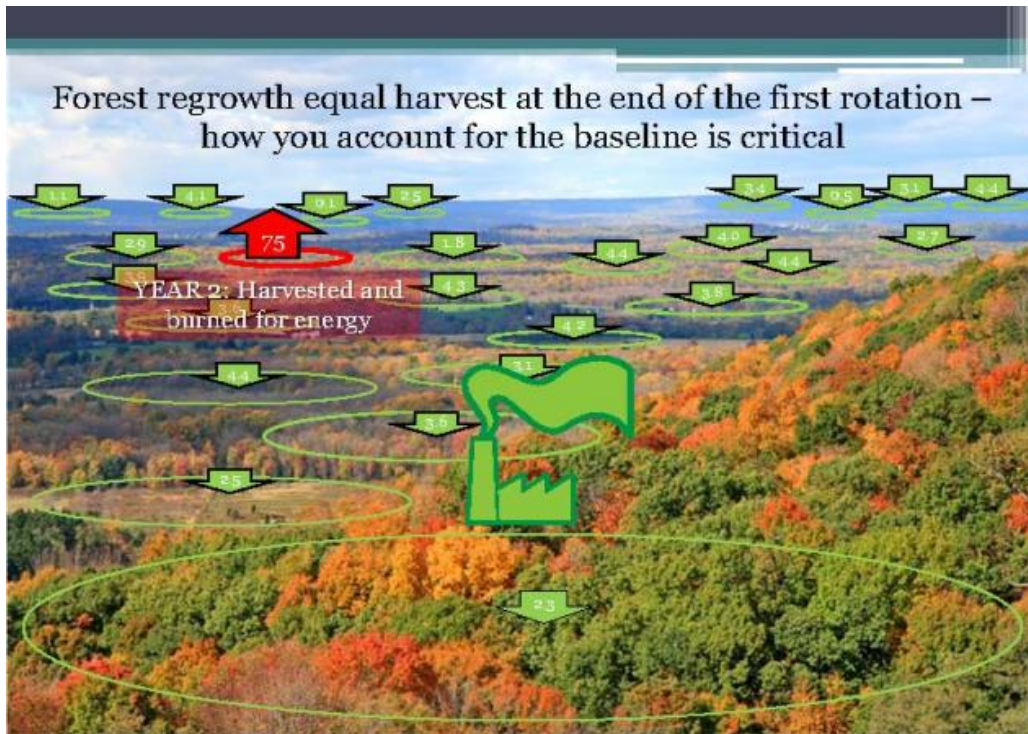
The multiple plot approach at 'time zero' looks at the CO₂ balance occurring on all of the lands providing forest biomass to a particular facility (supply circle). Neutrality is determined by the area of forest needed (combined plots) to absorb the CO₂ released from the utilization of the forest biomass by an energy conversion facility. In this approach, the on-going forest carbon cycling occurring within a supply circle is used to determine whether the carbon emissions that will result from the utilization of the forest biomass, are re-sequestered. This approach does account for CO₂ being reabsorbed from the atmosphere by forested land surrounding the harvested area and providing supply to a particular facility.

To demonstrate, in year zero, a 15-acre plot (Plot 1) is harvested and the residual biomass from this plot is utilized for bioenergy production resulting in CO₂ emissions. Concurrent to the harvest of this site, parallel sites (also allocated for supply) are sequestering CO₂ from the atmosphere. Carbon neutrality is possible at the point that the combination of the all of the sites comprising a facility's supply radius absorbs the same amount of CO₂ as that emitted as a result of the harvest and utilization of the biomass from Plot 1. So long as overall forest cover in a given supply circle stays the same (i.e. is not converted to other purposes), carbon neutrality is assumed to always be the case. In essence, the carbon being emitted from the facility and harvested from Plot 1 is in balance with the CO₂ being absorbed by other plots in the facility's supply circle.

²¹ See Approach #4.

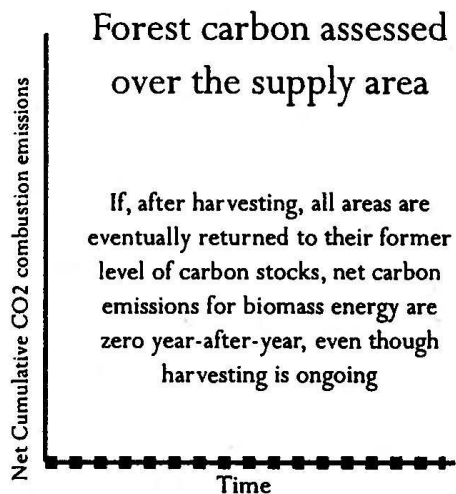
²² September 10, 2010. Letter to EPA Administrator Lisa Jackson from Governor Gregoire and Public Lands Commissioner Peter Goldmark.

²³ Chapter 222-34 WAC Reforestation.

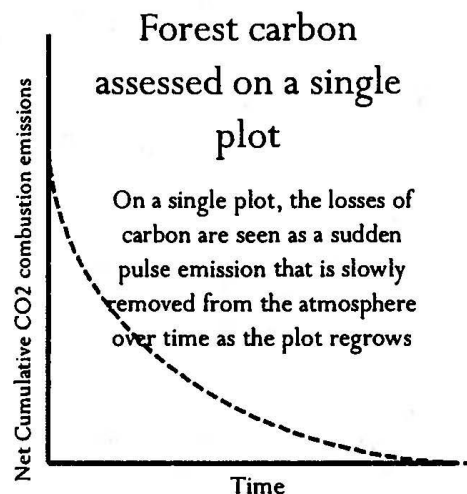


When this approach is applied, *so long as the land in the facility's supply region is not converted to other purposes*, the process is considered carbon neutral.

What the atmosphere sees.



What the neighbor sees.



Reid Miner, "Biomass Carbon Accounting" (from presentation delivered at the 2010 West Coast Regional Meeting of NCASI)

In the “*Facility Supply Circle, Right Now*” accounting scenario, there is surge of CO₂ released to the atmosphere. This surge is balanced by the CO₂ being simultaneously absorbed by other plots in the supply circle of the facility. Thus, the process can be considered carbon neutral. From a GHG into the atmosphere standpoint, this is a better option than the combustion of fossil fuels with constant emissions that do not have re-absorption capacity.

From a policy standpoint, this is a challenging approach. For example, it is common for a single facility to source forest biomass from multiple-landowners. The facility generally does not influence the forest practices on the land from which supply is received, nor does it affect whether the lands remain in active forestry (or are converted to other uses) after harvest has occurred. Regulating stack emissions from a facility based on assumptions about the forest practices on the lands that supply biomass becomes troublesome, if not impossible. An extensive system of verification, supply chain and long-term post-harvest monitoring would be required. Because such a system is unlikely to be implemented, basing policies on this approach does not ensure that neutrality is maintained over time.

Approach #4: Right Here (Single Plot), Right Now and Immediate Future (Time Zero – 20 years) Analyses

The single plot approach at ‘time zero’ looks at the CO₂ balance occurring on a particular piece of land from which biomass has been removed and neutrality is determined by the length of time it takes this single plot to return to pre-harvest conditions. In this approach, this same piece of land is the only plot considered in determining when the “carbon debt” from forest biomass emissions is “re-paid.” This approach does not account for CO₂ being reabsorbed from the atmosphere by forested land surrounding the harvested area.

To demonstrate, in year zero, a 15-acre plot is harvested and the residual biomass from this plot is utilized for bioenergy production. After on-site regeneration begins, the re-growth of the site’s forest resources begins to remove small volumes of CO₂ from the atmosphere. This happens over the course of multiple years: the same plot, reabsorbing small increments of CO₂ from the atmosphere. Carbon neutrality is possible only at the point that the site returns to its pre-harvest condition. In Washington, this is usually between 30 and 60+ years (depending on harvest patterns of various landowner types).

The time period used by those that subscribe to this approach begins at the point of use and tends to conclude approximately 20 years after utilization. With the temporal parameters set as such, it is unlikely that the particular site from which the utilized biomass was harvested will be restored to its pre-utilization state of carbon sequestration.²⁴ It is important to note that, in Washington State, twenty year harvest rotations are not common. As previously mentioned, Washington harvest cycles tend toward 30-60+ years, depending on type of landowner.

Additionally, carbon storage and re-absorption capacity of a given plot, when this approach is taken, are commonly compared to the carbon storage capacity of old growth forests.²⁵ In Washington State, forest biomass is not harvested from old growth forests. As a result, this comparison is not applicable.

In the “Right Here, Right Now and Immediate Future” scenario, there is surge of CO₂ released to the atmosphere. Over time, this is reduced until carbon neutrality (based on a return to original conditions) is

²⁴ Law, J., B.E. Law, K Hibbard. 2007. “Post-fire carbon pools and fluxes in semi-arid ponderosa pine in Central Oregon.” *Global Change Biology*. 13: 1748-1760

Law, B.E., P. Thornton, J.Irvine, S. Van Tuyl, P. Anthoni. 2001. “Carbon storage and fluxes in ponderosa pine forests at different developmental stages.” *Global Climate Biology*. 7:755-777.

²⁵ Janisch, J.E., M.E Harmon. “Successional changes in live and dead wood carbon stores: implications for net ecosystem productivity.” *Tree Physiology*. 22 (2-3): 77-89.

achieved, making biogenic energy production preferable over time from an emissions standpoint to fossil-based energy production which doesn't include the re-absorption capacity of forests.

A recently released study by the Manomet Center for Conservation Sciences in Massachusetts uses the "Right Here, Right Now" approach, and came to the following conclusions²⁶:

- The initial carbon emitted into the atmosphere from the utilization of forest biomass in energy production is greater than an equivalent amount of fossil fuel that is released at the same point of use. Only after enough time has passed for the previously harvested site to reabsorb (through re-planting activities) the equivalent amount of CO₂ that was released at the point of use, is the 'carbon debt' repaid. It is only beyond this point that the utilization of forest biomass can be viewed as having less of a GHG impact than fossil fuels.
- It is not accurate to accept forest biomass utilization as carbon neutral carte blanche. A number of factors need to be considered before conclusions can be drawn: where the forest biomass is from, the forest practices regulations governing the plot from which the biomass is being harvested, and the processing technologies being utilized.
- In order to ensure that all of the factors mentioned above lead to the lowest GHG profile of the end use, it is recommended that one of several options related to the verifiable sustainability of harvesting practices be employed.²⁷
- Using biomass in combined heat and power (CHP) systems is the most efficient in reducing GHG's over time when compared to fossil fuels.
(Walker, pgs. 95-113)

This approach focuses on the pulse of emissions that occur at the point of use and look out, as described earlier, only to approximately the 20-year horizon. The combination of these two approaches (emissions from today without accounting for the carbon cycle, looking out only to a 20-year time horizon, and accounting only for the site from which the biomass was harvested) result in the conclusion that the CO₂ emissions at the point of combustion are not ever balanced by the site's re-absorption upon regrowth:

"...harvesting existing forests for electricity²⁸ adds net carbon to the air. That remains true even if limited harvest rates leave the carbon stocks of re-growing forests unchanged, because those stocks would otherwise increase and contribute to the terrestrial carbon sink.... Maintaining the exemption for CO₂ emitted by bio-energy use under the protocol (IPCC) wrongly treats bioenergy from all biomass sources as carbon neutral." (Searchinger, et. al)

Because the study focuses primarily on the emissions today, they fail to recognize that in the long term, fossil based emissions will always surpass the biogenic emissions that result from biomass utilization.

²⁶ The Manomet study related only to conditions (both industrial and in-forest) in Massachusetts and, as a result of forestry practices in Massachusetts, it was assumed that whole trees would be used (in addition to forestry by-products) for bioenergy production. These assumptions can are not applicable to economic conditions, forest practices and energy policies governing forest biomass utilization in Washington State.

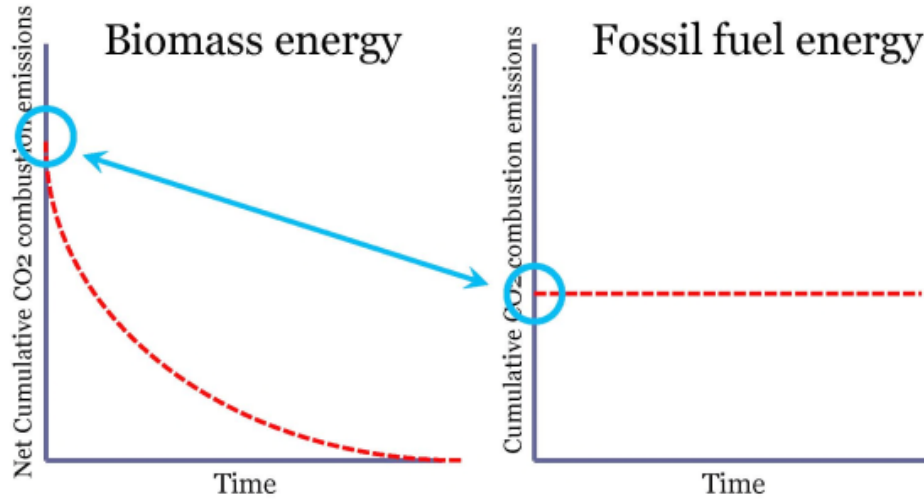
²⁷ Options include (excerpted from pg 8):

- Option 1: Establish a transparent self-monitoring, self-reporting process for bioenergy facilities designed to foster sustainable wood procurement practices.
- Option 2: Require bioenergy facilities to purchase wood from forests with approved forest management plans.
- Option 3: Require bioenergy facilities to submit wood supply impact assessments.
- Option 4: Establish formal criteria for approval of wood supply impact assessments – possible criteria might include limits on the amount of harvests relative to anticipated forest growth in the wood basket zone.

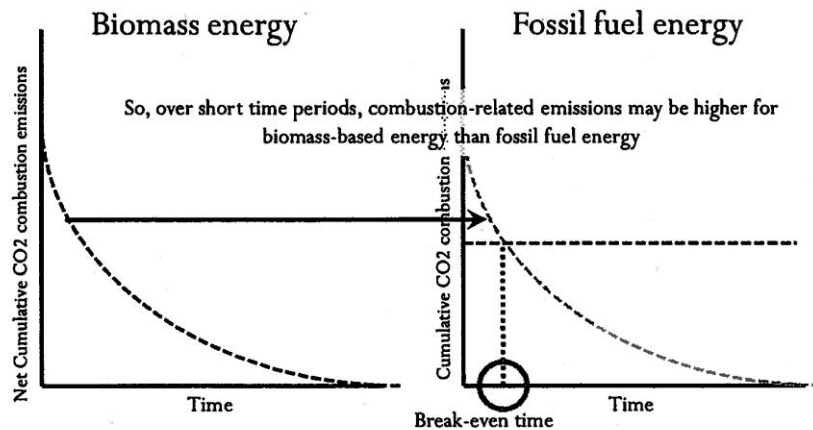
²⁸ This, similar to the Manomet Study, implies that whole trees will be utilized for energy generation. In Washington, economics would not support this practice.

single plot analysis

Biomass emissions will be higher initially because more fuel is needed to generate the same amount of usable energy



Graphically: single plot analysis



Reid Miner, "Biomass Carbon Accounting" (from presentation delivered at the 2010 West Coast Regional Meeting of NCASI)

Summary

As demonstrated above, the geographic area and time periods used ultimately define whether or not forest biomass is considered carbon neutral.

Another approach to comparatively analyzing emissions from specific facilities is the “life cycle analysis” method. The GHG implications of the utilization of forest biomass for energy production, when looking at this issue from a life cycle standpoint, can vary significantly depending on the processing technology being employed by the end user and the efficiency of that technology. Combined heat and power (CHP) systems are thought to be the most efficient use of forest biomass from a ton/Btu of energy produced standpoint²⁹. Other systems that are currently under development³⁰ are closed loop, meaning all of the ‘waste’ from the process (steam, heat, etc.) is used to power the process itself.

The other issue that must be addressed when looking at the atmospheric carbon implications of forest biomass utilization is that of the energy source(s) the forest biomass replaces. From a life cycle standpoint, the utilization of forest biomass in a highly efficient system will likely always have a smaller life-cycle GHG profile than the fossil-based products being replaced.

The Olympic Region Clean Air Agency (ORCAA) has recently completed a study that compared different ‘fates’ of forest biomass (from on-site decomposition to CHP to energy production) using a life cycle approach to analysis. Their study included emissions that resulted from transportation and pre-processing, as well as stack emissions. In most cases, utilization of forest biomass in an efficient system released a lower quantity of GHG’s into the atmosphere than either leaving the slash on-site to decompose or burning it in a slash pile.³¹ In nearly all of the scenarios evaluated, utilizing forest biomass released fewer GHGs than using fossil based fuel sources.

Policy Conclusions

Washington’s forest biomass sector, if thoughtfully deployed, promises to significantly contribute to the State’s renewable energy goals, enhance the health of Washington’s forests, and create needed jobs in rural communities across the State. Washington’s forests have played a central role in the State’s heritage and can continue to do so if opportunities are explored to help maintain economic vitality in the sector while not jeopardizing ecological health.

The atmospheric impacts of the greenhouse gases that result from the utilization of forest biomass should be critically examined and policy should reflect a thoughtful and deliberate approach to addressing the issue. The Washington Department of Natural Resources views forest biomass as an essential element of the State’s emerging renewable energy economy. The agency also holds the position that forest biomass utilization in the production of renewable energy is carbon neutral, so long as the state’s forest inventory is maintained (as described in approach #2). The adoption of this approach points to the importance of ensuring that the sequestration capacity of our forests continues to be maintained through the maintenance of our forested lands. Looking to the near future, existing research on in-forest biomass recovery practices will be reviewed in the pending state-wide forest biomass supply assessment. The assessment will provide context and inform the state’s Forest Practices Rules that govern in-forest activities to protect public resources.

²⁹ www.northwestcleanenergy.org

³⁰ Granastein, D. et. al. “Use of Biochar from the Pyrolysis of Waste Organic Material as a Soil Amendment.” Center for Sustaining Agriculture and Natural Resources. Washington State University. July 2009.

Garcia-Perez, M. et. al. “New Bio-refinery Concept to Convert Softwood Bark to Transportation Fuels: Final Report to the Washington State Department of Ecology.” Washington State Department of Ecology. Publication Number 09-07-061.

³¹ Lee, Carrie et. al. “Greenhouse gas and air pollutant emissions of alternatives for woody biomass residues.” Stockholm Environmental Institute. Olympic Region Clean Air Authority. November 2010.

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CERTIFICATION OF ENROLLMENT

HOUSE BILL 2165

61st Legislature
2009 Regular Session

Passed by the House April 18, 2009
Yeas 96 Nays 0

Speaker of the House of Representatives

Passed by the Senate April 7, 2009
Yeas 44 Nays 0

President of the Senate

Approved

Governor of the State of Washington

CERTIFICATE

I, Barbara Baker, Chief Clerk of the House of Representatives of the State of Washington, do hereby certify that the attached is **HOUSE BILL 2165** as passed by the House of Representatives and the Senate on the dates hereon set forth.

Chief Clerk

FILED

**Secretary of State
State of Washington**

HOUSE BILL 2165

AS AMENDED BY THE SENATE

Passed Legislature - 2009 Regular Session

State of Washington

61st Legislature

2009 Regular Session

By Representatives Van De Wege, Haler, Blake, Kretz, McCoy, Hinkle, Ormsby, Nelson, Eddy, Hasegawa, Takko, Chase, Kenney, Warnick, and Morrell; by request of Department of Natural Resources

Read first time 02/11/09. Referred to Committee on Technology, Energy & Communications.

1 AN ACT Relating to authorizing the department of natural resources
2 to conduct a forest biomass energy demonstration project; amending RCW
3 76.06.150 and 43.30.020; adding new sections to chapter 43.30 RCW; and
4 creating a new section.

5 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

6 NEW SECTION. **Sec. 1.** The legislature finds that forest biomass is
7 an abundant and renewable byproduct of Washington's forest land
8 management. Forest biomass can be utilized to generate clean renewable
9 energy.

10 In some Washington forests, residual forest biomass is burned on
11 site or left to decompose. The lack of forest products markets in some
12 areas means that standing forest biomass removed for forest health and
13 wildfire risk reduction treatments must occur at substantial cost.
14 Utilizing forest biomass to generate energy can reduce the greenhouse
15 gases emitted by burning forest biomass.

16 The legislature further finds that the emerging forest biomass
17 energy economy is challenged by: Not having a reliable supply of
18 predictably priced forest biomass feedstock; shipping and processing

costs; insufficient forest biomass processing infrastructure; and feedstock demand.

The legislature finds that making use of the state's forest biomass resources for energy production may generate new revenues or increase asset values of state lands and state forest lands, protect forest land of all ownerships from severe forest health problems, stimulate Washington's economy, create green jobs, and reduce Washington's dependence on foreign oil.

It is the intent of the legislature to support forest biomass demonstration projects that employ promising processing technologies. The demonstration projects must emphasize public and private forest biomass feedstocks that are generated as byproducts of current forest practices. The project must reveal ways to overcome the current impediments to the developing forest biomass energy economy, and ways to realize ecologically sustainable outcomes from that development.

NEW SECTION. **Sec. 2.** (1) The department may develop and implement forest biomass energy demonstration projects, one east of the crest of the Cascade mountains and one west of the crest of the Cascade mountains. The demonstration projects must be designed to:

(a) Reveal the utility of Washington's public and private forest biomass feedstock;

(b) Create green jobs and generate renewable energy;

(c) Generate revenues or improve asset values for beneficiaries of state lands and state forest lands;

(d) Improve forest health, reduce pollution, and restore ecological function; and

(e) Avoid interfering with the current working area for forest biomass collection surrounding an existing fixed location biomass energy production site.

(2) To develop and implement the forest biomass energy demonstration projects, the department may form forest biomass energy partnerships or cooperatives.

(3) The forest biomass energy partnerships or cooperatives are encouraged to be public-private partnerships focused on convening the entities necessary to grow, harvest, process, transport, and utilize forest biomass to generate renewable energy. Particular focus must be

1 given to recruiting and employing emerging technologies that can
2 locally process forest biomass feedstock to create local green jobs and
3 reduce transportation costs.

4 (4) The forest biomass energy partnerships or cooperatives may
5 include, but are not limited to: Entrepreneurs or organizations
6 developing and operating emerging technology to process forest biomass;
7 industrial electricity producers; contractors capable of providing the
8 local labor needed to collect, process, and transport forest biomass
9 feedstocks; tribes; federal land management agencies; county, city, and
10 other local governments; the department of community, trade, and
11 economic development; state trust land managers; an organization
12 dedicated to protecting and strengthening the jobs, rights, and working
13 conditions of Washington's working families; accredited research
14 institution representatives; an industrial timber land manager; a small
15 forest landowner; and a not-for-profit conservation organization.

16 NEW SECTION. **Sec. 3.** By December 2010, the department shall
17 provide a progress report to the legislature regarding its efforts to
18 develop, implement, and evaluate forest biomass energy demonstration
19 projects and any other department initiatives related to forest
20 biomass. The report may include an evaluation of:

21 (1) The status of the department's abilities to secure funding,
22 partners, and other resources for the forest biomass energy
23 demonstration projects;

24 (2) The status of the biomass energy demonstration projects
25 resulting from the department's efforts;

26 (3) The status and, if applicable, additional needs of forest
27 landowners within the demonstration project areas for estimating
28 sustainable forest biomass yields and availability;

29 (4) Forest biomass feedstock supply and forest biomass market
30 demand barriers, and how they can best be overcome including actions by
31 the legislature and United States congress; and

32 (5) Sustainability measures that may be instituted by the state to
33 ensure that an increasing demand for forest biomass feedstocks does not
34 impair public resources or the ecological conditions of forests.

35 NEW SECTION. **Sec. 4.** For the purposes of implementing this act,

1 the department may seek grants or financing from the federal
2 government, industry, or philanthropists.

3 **Sec. 5.** RCW 76.06.150 and 2004 c 218 s 2 are each amended to read
4 as follows:

5 (1) The commissioner of public lands is designated as the state of
6 Washington's lead for all forest health issues.

7 (2) The commissioner of public lands shall strive to promote
8 communications between the state and the federal government regarding
9 forest land management decisions that potentially affect the health of
10 forests in Washington and will allow the state to have an influence on
11 the management of federally owned land in Washington. Such government-
12 to-government cooperation is vital if the condition of the state's
13 public and private forest lands are to be protected. These activities
14 may include, when deemed by the commissioner to be in the best interest
15 of the state:

16 (a) Representing the state's interest before all appropriate local,
17 state, and federal agencies;

18 (b) Assuming the lead state role for developing formal comments on
19 federal forest management plans that may have an impact on the health
20 of forests in Washington; ~~((and))~~

21 (c) Pursuing in an expedited manner any available and appropriate
22 cooperative agreements, including cooperating agency status
23 designation, with the United States forest service and the United
24 States bureau of land management that allow for meaningful
25 participation in any federal land management plans that could affect
26 the department's strategic plan for healthy forests and effective fire
27 prevention and suppression, including the pursuit of any options
28 available for giving effect to the cooperative philosophy contained
29 within the national environmental policy act of 1969 (42 U.S.C. Sec.
30 4331); and

31 (d) Pursuing agreements with federal agencies in the service of
32 forest biomass energy partnerships and cooperatives authorized under
33 sections 2 through 4 of this act.

34 (3) The commissioner of public lands shall report to the chairs of
35 the appropriate standing committees of the legislature every year on
36 progress under this section, including the identification, if deemed

appropriate by the commissioner, of any needed statutory changes,
policy issues, or funding needs.

Sec. 6. RCW 43.30.020 and 1965 c 8 s 43.30.020 are each amended to
read as follows:

~~((For the purpose of this chapter, except where a different
interpretation is required by the context:))~~ The definitions in this
section apply throughout this chapter unless the context clearly
requires otherwise.

(1) "Department" means the department of natural resources((+)).

(2) "Board" means the board of natural resources((+)).

(3) "Administrator" means the administrator of the department of
natural resources((+)).

(4) "Supervisor" means the supervisor of natural resources((+)).

(5) "Agency" and "state agency" means any branch, department, or
unit of the state government, however designated or constituted((+)).

(6) "Commissioner" means the commissioner of public lands.

(7) "Forest biomass" means the byproducts of: Current forest
practices prescribed or permitted under chapter 76.09 RCW; current
forest protection treatments prescribed or permitted under chapter
76.04 RCW; or the byproducts of forest health treatments prescribed or
permitted under chapter 76.06 RCW. "Forest biomass" does not include
wood pieces that have been treated with chemical preservatives such as:
Creosote, pentachlorophenol, or copper-chrome-arsenic; wood from old
growth forests, except wood removed for forest health treatments under
chapter 76.06 RCW and RCW 79.15.540; wood required by chapter 76.09 RCW
for large woody debris recruitment; or municipal solid waste.

NEW SECTION. **Sec. 7.** If any provision of this act or its
application to any person or circumstance is held invalid, the
remainder of the act or the application of the provision to other
persons or circumstances is not affected.

NEW SECTION. **Sec. 8.** Sections 2 through 4 of this act are each
added to chapter 43.30 RCW under the subchapter heading "duties and
powers--forested lands."

--- END ---

CERTIFICATION OF ENROLLMENT
SECOND SUBSTITUTE HOUSE BILL 2481

61st Legislature
2010 Regular Session

Passed by the House March 6, 2010
Yeas 94 Nays 1

Speaker of the House of Representatives

Passed by the Senate March 3, 2010
Yeas 47 Nays 0

President of the Senate

Approved

Governor of the State of Washington

CERTIFICATE

I, Barbara Baker, Chief Clerk of the House of Representatives of the State of Washington, do hereby certify that the attached is **SECOND SUBSTITUTE HOUSE BILL 2481** as passed by the House of Representatives and the Senate on the dates hereon set forth.

Chief Clerk

FILED

**Secretary of State
State of Washington**

SECOND SUBSTITUTE HOUSE BILL 2481

AS AMENDED BY THE SENATE

Passed Legislature - 2010 Regular Session

State of Washington

61st Legislature

2010 Regular Session

By House General Government Appropriations (originally sponsored by Representatives Van De Wege, Kretz, Blake, Hinkle, Ormsby, Dunshee, McCoy, Eddy, Upthegrove, Carlyle, Haler, Morrell, Warnick, and Kessler; by request of Commissioner of Public Lands)

READ FIRST TIME 02/09/10.

1 AN ACT Relating to the department of natural resources authority to
2 enter into forest biomass supply agreements; amending RCW 79.02.010,
3 43.30.020, 76.06.180, 79.15.100, 79.15.220, 79.15.510, and 79.15.510;
4 adding a new chapter to Title 79 RCW; creating a new section; providing
5 an effective date; and providing expiration dates.

6 BE IT ENACTED BY THE LEGISLATURE OF THE STATE OF WASHINGTON:

7 NEW SECTION. **Sec. 1.** The legislature finds that the utilization
8 of forest biomass materials located on state lands will assist in
9 achieving the purposes of the forest biomass energy demonstration
10 project under RCW 43.30.835, facilitate and support the emerging forest
11 biomass market and clean energy economy, and enable the department to
12 encourage biomass energy development on state trust lands for the trust
13 land's potential long-term benefits to trust beneficiaries. The
14 legislature finds that biomass utilization on state forest lands must
15 be accomplished in a manner that retains organic components of the
16 forest necessary to restore or sustain forest ecological functions.

17 NEW SECTION. **Sec. 2.** (1) The department may maintain a list of
18 all potential sources of forest biomass on state lands for the purposes

1 of identifying and making forest biomass, as defined in RCW 79.02.010,
2 available for sale, exploration, collection, processing, storage,
3 stockpiling, and conversion into energy, biofuels, for use in a
4 biorefinery, or any other similar use. Prior to entering an agreement
5 authorized by section 3(1) or 4 of this act, the department shall
6 complete an inventory of the available biomass in the area that will be
7 subject to the agreement, except that no inventory will be required as
8 a prerequisite for demonstration projects authorized pursuant to RCW
9 43.30.835. The inventory must contain, at a minimum, an estimated
10 amount of the forest biomass available in the area that will be subject
11 to the agreement and a determination of the ecological and operational
12 sustainability of the volumetric limit established by the agreement
13 under section 3(5) of this act.

14 (2) The data developed for each inventoried area will be compiled
15 for the list authorized by this section. In order to utilize the list
16 to limit or terminate any agreement authorized under this act, the
17 department must determine that the overall supply of forest biomass in
18 a region or watershed has been reduced to a point such that further
19 exploration and collection of forest biomass may not be ecologically or
20 operationally sustainable or might otherwise threaten long-term forest
21 health.

22 NEW SECTION. **Sec. 3.** (1) The department is authorized to enter
23 forest biomass supply contracts on terms and conditions acceptable to
24 the department for terms of up to five years, except as provided in
25 subsection (4) of this section, for the purpose of providing a supply
26 of forest biomass during the term of the contract except as the term of
27 the contract may be limited under subsection (2) of this section,
28 provided that such a contract must terminate automatically upon the
29 removal of the agreed volume of biomass and the completion of other
30 conditions of the contract.

31 (2) The department may authorize the sale of forest biomass in a
32 contract for the sale of valuable materials under chapter 79.15 RCW
33 provided that the department complies with the provisions of this
34 chapter and: (a) Requires a separate bid and selects an apparent
35 highest bidder for the forest biomass separately from the sale of
36 valuable materials; (b) expressly includes forest biomass as an element
37 of the sale of the valuable materials to be sold in the sales contract;

1 or (c) a combination of (a) and (b) of this subsection. The term of
2 the contract for the removal of biomass, if the sale is made in
3 conformance with this subsection, must not exceed the term of the
4 contract for valuable materials sold under chapter 79.15 RCW.

5 (3) The department may: (a) Enter into direct sales contracts for
6 forest biomass, without public auction, based upon procedures adopted
7 by the board to ensure competitive market prices and accountability; or
8 (b) enter into contracts for forest biomass at public auction or by
9 sealed bid to the highest bidder in a manner consistent with the sale
10 procedures established for the sale of valuable materials in chapter
11 79.15 RCW or as may be adopted by the board.

12 (4) In the event a contracting entity makes a qualifying capital
13 investment of fifty million dollars or more, the department may enter
14 into an agreement for up to fifteen years. Such an agreement must
15 include provisions that are periodically adjusted for market
16 conditions. In addition, the conditions of the contract must include
17 provisions that allow the department, when in the best interest of
18 trust beneficiaries, to maintain the availability of biomass resources
19 on state lands to existing pulp and paper operations or other existing
20 biomass processing operations that are using such resources, in
21 quantities typical for the period of five years preceding the effective
22 date of this section. For the purposes of this section, "qualifying
23 capital investment" means a planned and committed investment at the
24 time the contract is set with the requirement that at least fifty
25 million dollars be invested before the removal of any biomass under the
26 contract.

27 (5) The department must specify in each contract an annual
28 volumetric limit of the total cubic volume or tons of forest biomass to
29 be supplied from a specific unit, geographically delineated area, or
30 region within a watershed or watersheds on an ecologically and
31 operationally sustainable basis. The department shall adopt general
32 procedures for making the biomass supply availability determinations
33 under this subsection. The procedures must be written to ensure that
34 biomass utilization on forest lands managed by the department is
35 accomplished in a manner that retains organic components of the forest
36 necessary to restore or sustain forest ecological functions. The
37 department shall develop utilization standards and operational methods
38 in recognition of the variability of on-site conditions. The

1 department may unilaterally amend the volume to be supplied by
2 providing the contracting party with a minimum of six months notice
3 prior to reducing the contract volume to be supplied if the department
4 determines, under section 2 of this act, that the available supply has
5 been reduced to a point such that further removal of forest biomass may
6 not be ecologically or operationally sustainable or may adversely
7 affect long-term forest health.

8 (6) At the expiration of the contract term, the department may
9 renew the contract for up to three additional five year periods on
10 terms and conditions acceptable to the department, if the department
11 finds: (a) An ecologically and operationally sustainable supply of
12 forest biomass is available for the term of the contract; (b) the
13 payment under the contract represents the fair market value at the time
14 of the renewal; and (c) the purchaser agrees to the estimated amount of
15 biomass material available.

16 (7) Where the department sells forest biomass in a contract for
17 sale of valuable materials under subsection (2) of this section, any
18 valuable material conveyed as timber in such a contract must count
19 toward the achievement of annual or decadal targets developed in the
20 sustainable timber harvest calculation required by RCW 79.10.320, or
21 similar targets for timber harvest volume, even where the purchaser
22 uses that material as a biomass energy feedstock. All other biomass
23 volume conveyed as authorized in this chapter must not be counted
24 toward such sustainable timber harvest targets.

25 (8) All contractors and their operations authorized under this
26 section shall comply with all applicable state and federal laws and
27 regulations.

28 NEW SECTION. **Sec. 4.** The department is authorized to lease state
29 lands for the purpose of the sale, exploration, collection, processing,
30 storage, stockpiling, and conversion of biomass into energy or
31 biofuels, the development of a biorefinery, or for any other resource
32 use derived from biomass if the department is able to obtain a fair
33 market rental return to the state or the appropriate constitutional or
34 statutory trust and if the lease is in the best interest of the state
35 and the affected trust, as follows:

36 (1) Leases authorized under this chapter may be entered into by

1 public auction, in accordance with the provisions of RCW 79.13.140, or
2 by negotiation.

3 (2) All leases must contain such terms and conditions as may be
4 prescribed by the department in accordance with the provision of this
5 act and to ensure that removal of forest biomass is ecologically and
6 operationally sustainable. Leases authorized under this act may be for
7 a term of no more than fifty years.

8 (3) For leases that involve the development of biomass processing,
9 biofuel manufacturing, or biomass energy production facilities, the
10 department may include provisions for reduced rent until an approved
11 plan of development is completed and the facility is operational,
12 provided that provisions are included to require: (a) Adequate
13 assurances to protect the department's interest in a future rental
14 income stream; (b) the demonstration of reasonable progress consistent
15 with an approved plan of development; and (c) a lump sum payment to the
16 department in the amount of the difference between the fair market rent
17 and the reduced rent, if the approved plan of development is not
18 completed in the time required in the plan.

19 (4) The department may require the payment of production rent or
20 other compensation for the use of the land and biomass materials on the
21 land. If the department is not entering a supply contract under
22 section 3 of this act for any forest biomass to be supplied for the
23 lease purposes from the leased land, then the department must require
24 a royalty payment for the contribution to value of any product created
25 by the lessee that is associated with forest biomass removed from the
26 leased land in an amount fixed by the board.

27 (5) All lessees and their operations authorized under this section
28 shall comply with all applicable state and federal laws and
29 regulations.

30 NEW SECTION. **Sec. 5.** (1) For the purpose of improving forest
31 health on state trust lands, and to better clarify the relationship of
32 forest biomass with the by-products of forest health and fuel reduction
33 treatments that have been traditionally utilized for other products,
34 the department of natural resources shall evaluate how the supply
35 agreements in sections 3 and 4 of this act could be utilized to sustain
36 or create rural jobs and timber manufacturing infrastructure, and to
37 sell state timber to traditional types of timber purchasers. The

1 department shall report its findings to the appropriate committees of
2 the legislature by December 15, 2010, and the evaluation must at a
3 minimum identify how such supply agreements could:

4 (a) Ensure the department of natural resources meets its fiduciary
5 responsibility to the state's trust beneficiaries;

6 (b) Restore or sustain a competitive market for state timber sales;

7 (c) Generate returns for the trust that are commensurate with
8 fluctuating market prices; and

9 (d) Ensure environmental compliance with all pertinent state and
10 federal laws, and provide for ecologically and operationally
11 sustainable biomass removal.

12 (2) For the purposes of proving the concepts evaluated in this
13 section, the department may, in addition to the authorities granted in
14 section 3 of this act, establish a five-year forest health and fuel
15 reduction supply agreement demonstration project. Solicitation of
16 private industry partners for such a project must be competitive, must
17 focus on areas where traditional forest products manufacturing
18 infrastructure and rural jobs have been lost, and should consider
19 prioritizing partners utilizing materials for both traditional forest
20 products and biomass energy conversion.

21 **Sec. 6.** RCW 79.02.010 and 2004 c 199 s 201 are each amended to
22 read as follows:

23 The definitions in this section apply throughout this title unless
24 the context clearly requires otherwise.

25 (1) "Aquatic lands" means all state-owned tidelands, shorelands,
26 harbor areas, and the beds of navigable waters as defined in (~~chapter~~
27 ~~79.90~~) RCW 79.105.060 that are administered by the department.

28 (2) "Board" means the board of natural resources.

29 (3) "Commissioner" means the commissioner of public lands.

30 (4) "Community and technical college forest reserve lands" means
31 lands managed under RCW 79.02.420.

32 (5) "Department" means the department of natural resources.

33 (6) "Improvements" means anything considered a fixture in law
34 placed upon or attached to lands administered by the department that
35 has changed the value of the lands or any changes in the previous
36 condition of the fixtures that changes the value of the lands.

37 (7) "Land bank lands" means lands acquired under RCW 79.19.020.

1 (8) "Person" means an individual, partnership, corporation,
2 association, organization, cooperative, public or municipal
3 corporation, or agency of a federal, state, or local governmental unit,
4 however designated.

5 (9) "Public lands" means lands of the state of Washington
6 administered by the department including but not limited to state
7 lands, state forest lands, and aquatic lands.

8 (10) "State forest lands" means lands acquired under RCW 79.22.010,
9 79.22.040, and 79.22.020.

10 (11) "State lands" includes:

11 (a) School lands, that is, lands held in trust for the support of
12 the common schools;

13 (b) University lands, that is, lands held in trust for university
14 purposes;

15 (c) Agricultural college lands, that is, lands held in trust for
16 the use and support of agricultural colleges;

17 (d) Scientific school lands, that is, lands held in trust for the
18 establishment and maintenance of a scientific school;

19 (e) Normal school lands, that is, lands held in trust for state
20 normal schools;

21 (f) Capitol building lands, that is, lands held in trust for the
22 purpose of erecting public buildings at the state capital for
23 legislative, executive, and judicial purposes;

24 (g) Institutional lands, that is, lands held in trust for state
25 charitable, educational, penal, and reformatory institutions; and

26 (h) Land bank, escheat, donations, and all other lands, except
27 aquatic lands, administered by the department that are not devoted to
28 or reserved for a particular use by law.

29 (12) "Valuable materials" means any product or material on the
30 lands, such as forest products, forage or agricultural crops, stone,
31 gravel, sand, peat, and all other materials of value except: (a)
32 Mineral, coal, petroleum, and gas as provided for under chapter 79.14
33 RCW; and (b) forest biomass as provided for under chapter 79.-- RCW
34 (the new chapter created in section 14 of this act).

35 (13)(a) "Forest biomass" means the by-products of: Current forest
36 management activities; current forest protection treatments prescribed
37 or permitted under chapter 76.04 RCW; or the by-products of forest
38 health treatment prescribed or permitted under chapter 76.06 RCW.

1 (b) "Forest biomass" does not include wood pieces that have been
2 treated with chemical preservatives such as: Creosote,
3 pentachlorophenol, or copper-chrome-arsenic; wood from existing old
4 growth forests; wood required to be left on-site under chapter 76.09
5 RCW, the state forest practices act; and implementing rules, and other
6 legal and contractual requirements; or municipal solid waste.

7 **Sec. 7.** RCW 43.30.020 and 2009 c 163 s 6 are each amended to read
8 as follows:

9 The definitions in this section apply throughout this chapter
10 unless the context clearly requires otherwise.

11 (1) "Administrator" means the administrator of the department of
12 natural resources.

13 (2) "Agency" and "state agency" means any branch, department, or
14 unit of the state government, however designated or constituted.

15 (3) "Board" means the board of natural resources.

16 (4) "Commissioner" means the commissioner of public lands.

17 (5) "Department" means the department of natural resources.

18 ~~(6) ("Forest biomass" means the by products of: Current forest~~
19 ~~practices prescribed or permitted under chapter 76.09 RCW; current~~
20 ~~forest protection treatments prescribed or permitted under chapter~~
21 ~~76.04 RCW; or the by products of forest health treatments prescribed or~~
22 ~~permitted under chapter 76.06 RCW. "Forest biomass" does not include~~
23 ~~wood pieces that have been treated with chemical preservatives such as:~~
24 ~~Creosote, pentachlorophenol, or copper-chrome-arsenic; wood from old~~
25 ~~growth forests, except wood removed for forest health treatments under~~
26 ~~chapter 76.06 RCW and RCW 79.15.540; wood required by chapter 76.09 RCW~~
27 ~~for large woody debris recruitment; or municipal solid waste.~~

28 ~~(7))~~ "Supervisor" means the supervisor of natural resources.

29 **Sec. 8.** RCW 76.06.180 and 2007 c 480 s 7 are each amended to read
30 as follows:

31 (1) Prior to issuing a forest health hazard warning or forest
32 health hazard order, the commissioner shall consider the findings and
33 recommendations of the forest health technical advisory committee and
34 shall consult with county government officials, forest landowners and
35 forest land managers, consulting foresters, and other interested
36 parties to gather information on the threat, opportunities or

1 constraints on treatment options, and other information they may
2 provide. The commissioner, or a designee, shall conduct a public
3 hearing in a county within the geographical area being considered.

4 (2) The commissioner of public lands may issue a forest health
5 hazard warning when he or she deems such action is necessary to manage
6 the development of a threat to forest health or address an existing
7 threat to forest health. A decision to issue a forest health hazard
8 warning may be based on existing forest stand conditions and:

9 (a) The presence of an uncharacteristic insect or disease outbreak
10 that has or is likely to (i) spread to multiple forest ownerships and
11 cause extensive damage to forests; or (ii) significantly increase
12 forest fuel that is likely to further the spread of uncharacteristic
13 fire;

14 (b) When, due to extensive physical damage from wind or ice storm
15 or other cause, there are (i) insect populations building up to large
16 scale levels; or (ii) significantly increased forest fuels that are
17 likely to further the spread of uncharacteristic fire; or

18 (c) When otherwise determined by the commissioner to be
19 appropriate.

20 (3) The commissioner of public lands may issue a forest health
21 hazard order when he or she deems such action is necessary to address
22 a significant threat to forest health. A decision to issue a forest
23 health hazard order may be based on existing forest stand conditions
24 and:

25 (a) The presence of an uncharacteristic insect or disease outbreak
26 that has (i) spread to multiple forest ownerships and has caused and is
27 likely to continue to cause extensive damage to forests; or (ii)
28 significantly increased forest fuels that are likely to further the
29 spread of uncharacteristic fire;

30 (b) When, due to extensive physical damage from wind or ice storm
31 or other cause (i) insect populations are causing extensive damage to
32 forests; or (ii) significantly increased forest fuels are likely to
33 further the spread of uncharacteristic fire;

34 (c) Insufficient landowner action under a forest health hazard
35 warning; or

36 (d) When otherwise determined by the commissioner to be
37 appropriate.

1 (4) A forest health hazard warning or forest health hazard order
2 shall be issued by use of a commissioner's order. General notice of
3 the commissioner's order shall be published in a newspaper of general
4 circulation in each county within the area covered by the order and on
5 the department's web site. The order shall specify the boundaries of
6 the area affected, including federal and tribal lands, the forest stand
7 conditions that would make a parcel subject to the provisions of the
8 order, and the actions landowners or land managers should take to
9 reduce the hazard. If the forest health hazard warning or order
10 relates to land managed by the department, the warning or order may
11 also contain provisions for the department's utilization of any forest
12 biomass pursuant to chapter 79.-- RCW (the new chapter created in
13 section 14 of this act).

14 (5) Written notice of a forest health hazard warning or forest
15 health hazard order shall be provided to forest landowners of
16 specifically affected property.

17 (a) The notice shall set forth:

18 (i) The reasons for the action;

19 (ii) The boundaries of the area affected, including federal and
20 tribal lands;

21 (iii) Suggested actions that should be taken by the forest
22 landowner under a forest health hazard warning or the actions that must
23 be taken by a forest landowner under a forest health hazard order;

24 (iv) The time within which such actions should or must be taken;

25 (v) How to obtain information or technical assistance on forest
26 health conditions and treatment options;

27 (vi) The right to request mitigation under subsection (6) of this
28 section and appeal under subsection (7) of this section;

29 (vii) These requirements are advisory only for federal and tribal
30 lands.

31 (b) The notice shall be served by personal service or by mail to
32 the latest recorded real property owner, as shown by the records of the
33 county recording officer as defined in RCW 65.08.060. Service by mail
34 is effective on the date of mailing. Proof of service shall be by
35 affidavit or declaration under penalty of perjury.

36 (6) Forest landowners who have been issued a forest health hazard
37 order under subsection (5) of this section may apply to the department
38 for the remission or mitigation of such order. The application shall

1 be made to the department within fifteen days after notice of the order
2 has been served. Upon receipt of the application, the department may
3 remit or mitigate the order upon whatever terms the department in its
4 discretion deems proper, provided the department deems the remission or
5 mitigation to be in the best interests of carrying out the purposes of
6 this chapter. The department may ascertain the facts regarding all
7 such applications in such reasonable manner and under such rule as it
8 deems proper.

9 (7) Forest landowners who have been issued a forest health hazard
10 order under subsection (5) of this section may appeal the order to the
11 forest practices appeals board.

12 (a) The appeal shall be filed within thirty days after notice of
13 the order has been served, unless application for mitigation has been
14 made to the department. When such an application for mitigation is
15 made, such appeal shall be filed within thirty days after notice of the
16 disposition of the application for mitigation has been served.

17 (b) The appeal must set forth:

18 (i) The name and mailing address of the appellant;

19 (ii) The name and mailing address of the appellant's attorney, if
20 any;

21 (iii) A duplicate copy of the forest health hazard order;

22 (iv) A separate and concise statement of each error alleged to have
23 been committed;

24 (v) A concise statement of facts upon which the appellant relies to
25 sustain the statement of error; and

26 (vi) A statement of the relief requested.

27 (8) A forest health hazard order issued under subsection (5) of
28 this section is effective thirty days after date of service unless
29 application for remission or mitigation is made or an appeal is filed.
30 When an application for remission or mitigation is made, the order is
31 effective thirty days after notice setting forth the disposition of the
32 application is served unless an appeal is filed from such disposition.
33 Whenever an appeal of the order is filed, the order shall become
34 effective only upon completion of all administrative and judicial
35 review proceedings and the issuance of a final decision confirming the
36 order in whole or in part.

37 (9) Upon written request, the department may certify as adequate a
38 forest health management plan developed by a forest landowner, before

1 or in response to a forest health hazard warning or forest health
2 hazard order, if the plan is likely to achieve the desired result and
3 the terms of the plan are being diligently followed by the forest
4 landowner. The certification of adequacy shall be determined by the
5 department in its sole discretion, and be provided to the requestor in
6 writing.

7 **Sec. 9.** RCW 79.15.100 and 2004 c 177 s 5 are each amended to read
8 as follows:

9 (1) Valuable materials may be sold separately from the land as a
10 "lump sum sale" or as a "scale sale."

11 (a) "Lump sum sale" means any sale offered with a single total
12 price applying to all the material conveyed.

13 (b) "Scale sale" means any sale offered with per unit prices to be
14 applied to the material conveyed.

15 (2) Payment for lump sum sales must be made as follows:

16 (a) Lump sum sales under five thousand dollars appraised value
17 require full payment on the day of sale.

18 (b) Lump sum sales appraised at over five thousand dollars but
19 under one hundred thousand dollars may require full payment on the day
20 of sale.

21 (c) Lump sum sales requiring full payment on the day of sale may be
22 paid in cash or by certified check, cashier's check, bank draft, or
23 money order, all payable to the department.

24 (3) Except for sales paid in full on the day of sale or sales with
25 adequate bid bonds, an initial deposit not to exceed twenty-five
26 percent of the actual or projected purchase price shall be made on the
27 day of sale.

28 (a) Sales with bid bonds are subject to the day of sale payment and
29 replacement requirements prescribed by RCW 79.15.110.

30 (b) The initial deposit must be maintained until all contract
31 obligations of the purchaser are satisfied. However, all or a portion
32 of the initial deposit may be applied as the final payment for the
33 valuable materials in the event the department determines that adequate
34 security exists for the performance or fulfillment of any remaining
35 obligations of the purchaser under the sale contract.

36 (4) Advance payments or other adequate security acceptable to the

1 department is required for valuable materials sold on a scale sale
2 basis or a lump sum sale not requiring full payment on the day of sale.

3 (a) The purchaser must notify the department before any operation
4 takes place on the sale site.

5 (b) Upon notification as provided in (a) of this subsection, the
6 department must require advanced payment or may allow purchasers to
7 submit adequate security.

8 (c) The amount of advanced payments or security must be determined
9 by the department and must at all times equal or exceed the value of
10 timber cut and other valuable materials processed or removed until paid
11 for.

12 (d) Security may be bank letters of credit, payment bonds,
13 assignments of savings accounts, assignments of certificates of
14 deposit, or other methods acceptable to the department as adequate
15 security.

16 (5) All valuable material must be removed from the sale area within
17 the period specified in the contract.

18 (a) The specified period may not exceed five years from date of
19 purchase except for stone, sand, gravel, fill material, or building
20 stone.

21 (b) The specified period for stone, sand, gravel, fill material, or
22 building stone may not exceed thirty years.

23 (c) In all cases, any valuable material not removed from the land
24 within the period specified in the contract reverts to the state. The
25 department may utilize any remaining forest biomass in accordance with
26 chapter 79.-- RCW (the new chapter created in section 14 of this act).

27 (6) The department may extend a contract beyond the normal
28 termination date specified in the sale contract as the time for removal
29 of valuable materials when, in the department's judgment, the purchaser
30 is acting in good faith and endeavoring to remove the materials. The
31 extension is contingent upon payment of the fees specified below.

32 (a) The extended time for removal shall not exceed:

33 (i) Forty years from date of purchase for stone, sand, gravel, fill
34 material, or building stone;

35 (ii) A total of ten years beyond the original termination date for
36 all other valuable materials.

37 (b) An extension fee fixed by the department will be charged based
38 on the estimated loss of income per acre to the state resulting from

1 the granting of the extension plus interest on the unpaid portion of
2 the contract. The board must periodically fix and adopt by rule the
3 interest rate, which shall not be less than six percent per annum.

4 (c) The sale contract shall specify:

5 (i) The applicable rate of interest as fixed at the day of sale and
6 the maximum extension payment; and

7 (ii) The method for calculating the unpaid portion of the contract
8 upon which interest is paid.

9 (d) The minimum extension fee is fifty dollars per extension plus
10 interest on the unpaid portion of the contract.

11 (e) Moneys received for any extension must be credited to the same
12 fund in the state treasury as was credited the original purchase price
13 of the valuable material sold.

14 (7) The department may, in addition to any other securities,
15 require a performance security to guarantee compliance with all
16 contract requirements. The security is limited to those types listed
17 in subsection (4) of this section. The value of the performance
18 security will, at all times, equal or exceed the value of work
19 performed or to be performed by the purchaser.

20 (8) The department does not need to comply with the provisions of
21 this chapter for forest biomass except as described in the provisions
22 of chapter 79.-- RCW (the new chapter created in section 14 of this
23 act). Forest biomass may not be included in any sales contract
24 authorized under this chapter unless the department has complied with
25 the provisions of chapter 79.-- RCW (the new chapter created in section
26 14 of this act).

27 (9) The provisions of this section apply unless otherwise provided
28 by statute.

29 **Sec. 10.** RCW 79.15.220 and 2001 c 250 s 14 are each amended to
30 read as follows:

31 When the department finds valuable materials on state land that are
32 damaged by fire, wind, flood, or from any other cause, it shall
33 determine if the salvage of the damaged valuable materials is in the
34 best interest of the trust for which the land is held, which may
35 include the salvage of forest biomass under chapter 79.-- RCW (the new
36 chapter created in section 14 of this act). If salvaging the valuable
37 materials is in the best interest of the trust, the department shall

1 proceed to offer the valuable materials for sale. The valuable
2 materials, when offered for sale, must be sold in the most expeditious
3 and efficient manner as determined by the department. In determining
4 if the sale is in the best interest of the trust the department shall
5 consider the net value of the valuable materials and relevant elements
6 of the physical and social environment.

7 **Sec. 11.** RCW 79.15.510 and 2009 c 418 s 2 are each amended to read
8 as follows:

9 (1) The department may establish a contract harvesting program for
10 directly contracting for the removal of timber and other valuable
11 materials from state lands and for conducting silvicultural treatments
12 consistent with RCW 79.15.540.

13 (2) The contract requirements must be compatible with the office of
14 financial management's guide to public service contracts.

15 (3) The department may not use contract harvesting for more than
16 twenty percent of the total annual volume of timber offered for sale.
17 However, volume removed primarily to address an identified forest
18 health issue under RCW 79.15.540 may not be included in calculating the
19 ~~((ten [twenty] percent))~~ annual limit of contract harvesting sales.
20 Forest biomass resulting from harvesting to address an identified
21 forest health issue under RCW 79.15.540 may be utilized in accordance
22 with chapter 79.-- RCW (the new chapter created in section 14 of this
23 act).

24 **Sec. 12.** RCW 79.15.510 and 2004 c 218 s 6 are each amended to read
25 as follows:

26 (1) The department may establish a contract harvesting program for
27 directly contracting for the removal of timber and other valuable
28 materials from state lands and for conducting silvicultural treatments
29 consistent with RCW 79.15.540.

30 (2) The contract requirements must be compatible with the office of
31 financial management's guide to public service contracts.

32 (3) The department may not use contract harvesting for more than
33 ten percent of the total annual volume of timber offered for sale.
34 However, volume removed primarily to address an identified forest
35 health issue under RCW 79.15.540 may not be included in calculating the
36 ~~((ten percent))~~ annual limit of contract harvesting sales. Forest

1 biomass resulting from harvesting to address an identified forest
2 health issue under RCW 79.15.540 may be utilized in accordance with
3 chapter 79.-- RCW (the new chapter created in section 14 of this act).

4 NEW SECTION. **Sec. 13.** The department of natural resources must
5 conduct a survey of scientific literature regarding the carbon
6 neutrality of forest biomass. The department must submit the survey
7 results with any findings and recommendations to the appropriate
8 committees of the legislature by December 15, 2010.

9 This section expires January 1, 2011.

10 NEW SECTION. **Sec. 14.** Sections 1 through 5 of this act constitute
11 a new chapter in Title 79 RCW.

12 NEW SECTION. **Sec. 15.** Section 11 of this act expires January 1,
13 2014.

14 NEW SECTION. **Sec. 16.** Section 12 of this act takes effect January
15 1, 2014.

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